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I. No lesions Indirect contact only	Rabid	—	None *
II. Licks 1. Unabraded skin	Rabid	—	None *
2. Abraded skin and abraded or unabraded mucosa	(a) Healthy	Healthy	None
	(b) Healthy	Clinical signs of rabies or proven rabid	Start vaccine at first sign of rabies in animal
	(c) Signs suggestive of rabies	Healthy	Start vaccine immediately. Stop treatment if animal is normal on 5th day after exposure**
	(d) Rabid, escaped, killed or unknown	—	Start vaccine immediately
III. Bites 1. Simple exposure	(a) Healthy	Healthy	None
	(b) Healthy	Clinical signs of rabies or proven rabid	Start vaccine at first sign of rabies in animal
	(c) Signs suggestive of rabies	Healthy	Start vaccine immediately. Stop treatment if animal is normal on 5th day after exposure**
	(d) Rabid, escaped, killed or unknown; or any bite by wolf, jackal, fox or other wild animal	—	Start vaccine immediately
2. Severe exposure (Multiple; or face, head or neck bites)	(a) Healthy	Healthy	Hyperimmune serum immediately. No vaccine as long as animal remains normal
	(b) Healthy	Clinical signs of rabies or proven rabid	As in III, 2, (a), but start vaccine at first sign of rabies
	(c) Signs suggestive of rabies	Healthy	Hyperimmune serum immediately, followed by vaccine. Vaccine may be stopped if animal is normal on 5th day after exposure
	(d) Rabid, escaped, killed or unknown, Any bite by wild animal	—	Hyperimmune serum immediately, followed by vaccine

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* Start vaccine immediately in young children and patients where a reliable history cannot be obtained.
** Alternative treatment would be to give hyperimmune serum and not start vaccine as long as animal remains normal.
Suggestions of Special Committee on Rabies, World Health Organization 1953.

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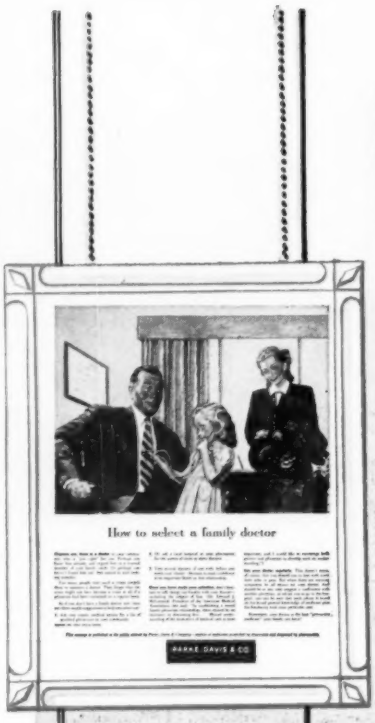
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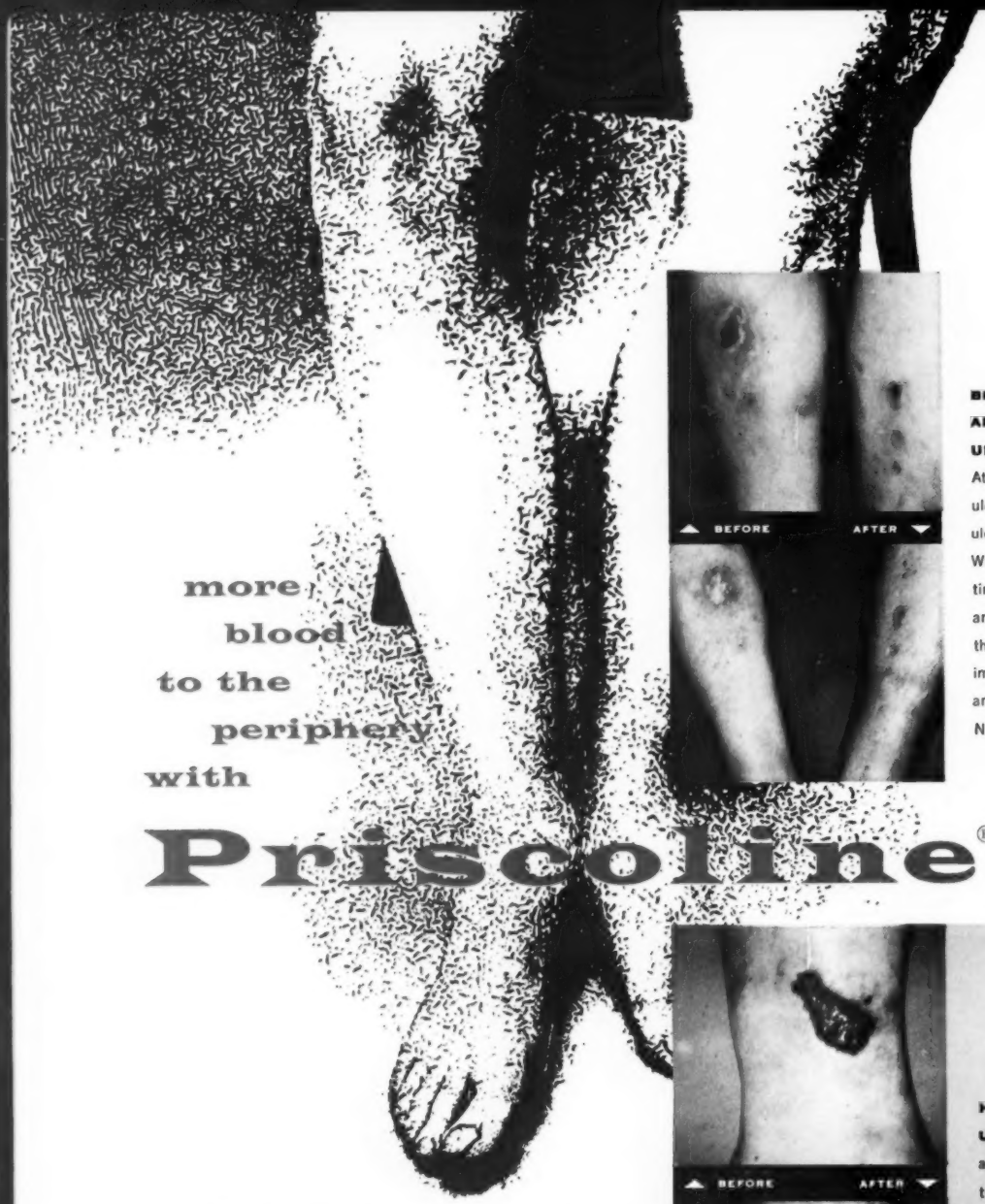

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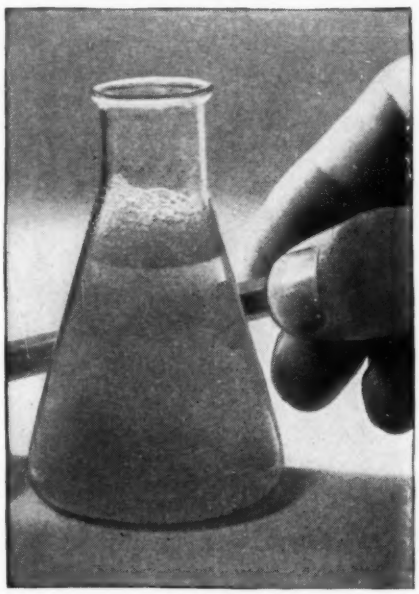

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1. *American Medical Association: New and Nonofficial Remedies, 1954. J. B. Lippincott Co., Philadelphia, p. 147*
2. *Scott, R. L., and others: Antibiot. & Chemo. 4:691 (June) 1954*

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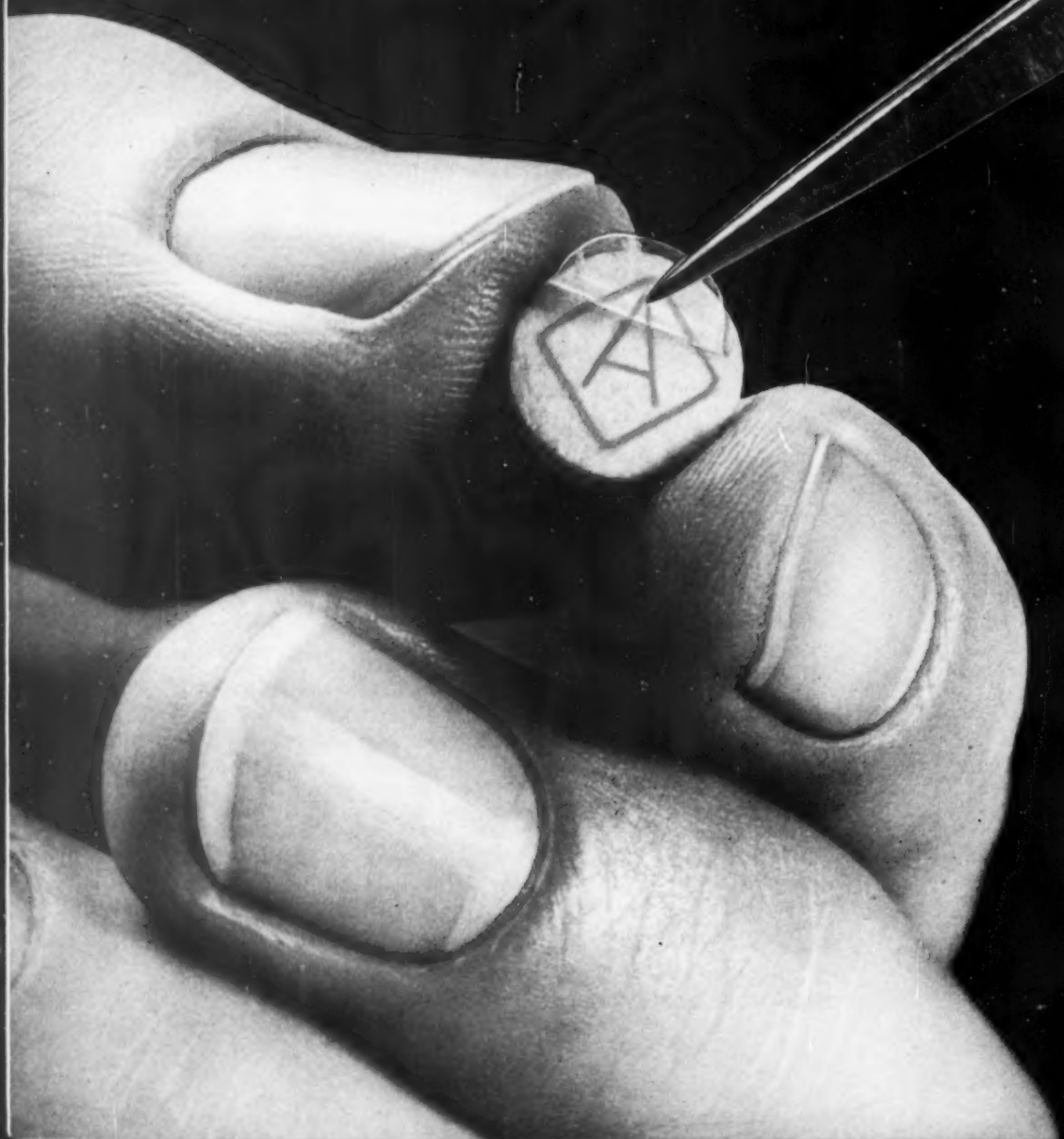

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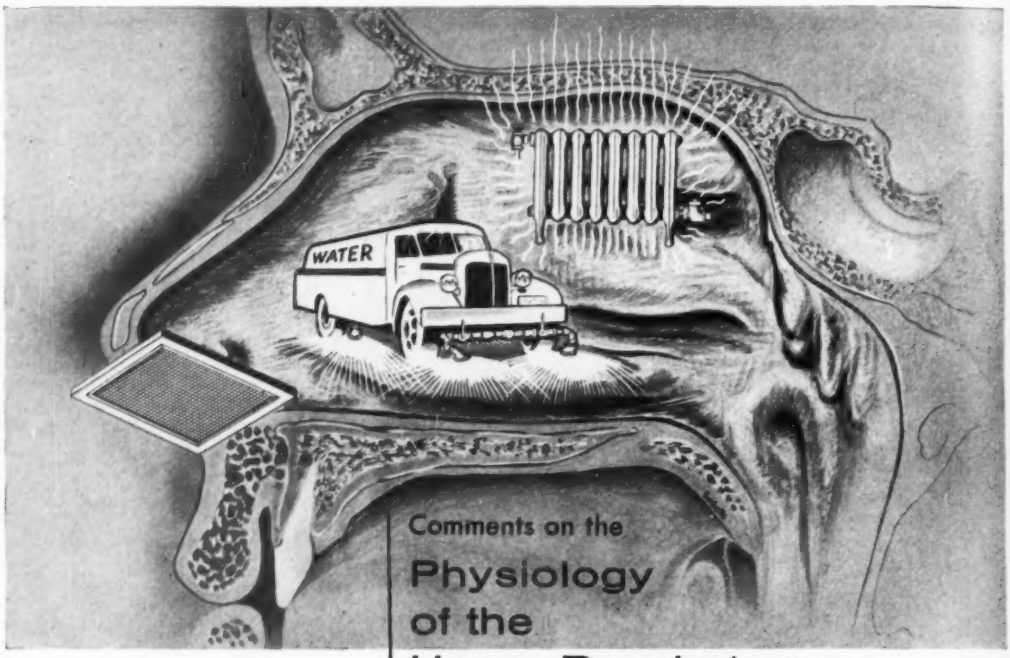

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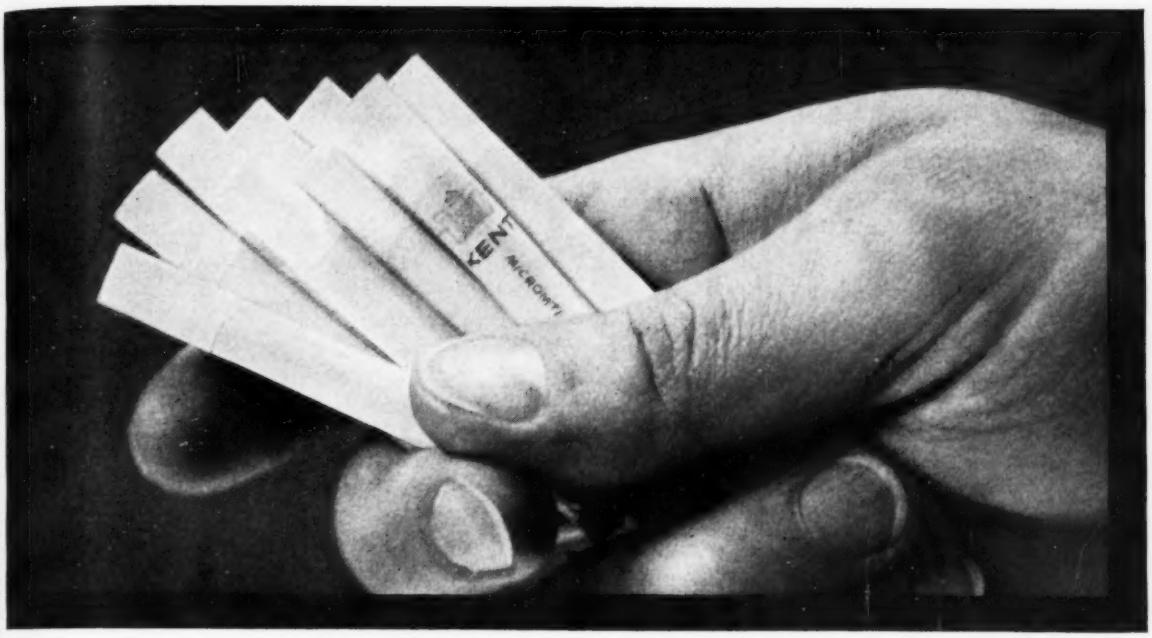

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The Journal

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Louisiana State Medical Society

Vol. 106, No. 11
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NOVEMBER, 1954

Published Monthly
1430 Tulane Avenue, New Orleans 12, La.

EARLY DIAGNOSIS IN LEPROSY *

LEE D. McLEAN, M. D. †
NEW ORLEANS

The average physician in Louisiana should be better informed about leprosy than his fellow physician in any other state in the union. The fact that he lives in an endemic area where more native born residents acquire the disease than in any other state [1], plus the fact that the National Leprosarium is located here, focuses his attention on this uncommon but not rare disease.

Since the advent of the sulfone drugs in the treatment of leprosy, a new era has dawned in the history of this ancient disease. We now have drugs that definitely help the majority of cases. Although only a small percentage of patients at Carville [2] show bacteriologic improvement sooner than a year after treatment has been started, clinical improvement, particularly in the skin lesions, is decidedly more rapid and a decrease in the number of demonstrable bacilli in the nasal mucosa and skin has been the rule with long continued treatment. The destructive deformities so commonly seen in the past are today being effectively prevented when treatment is started in the early stages of the disease. We, as practicing physicians in Louisiana, are compelled now, even more so than before, to sharpen our index of suspicion and increase our factual knowledge of the disease in order that cases may be diagnosed as early as possible.

It is with these thoughts in mind that I have the temerity to present a discussion of some of the more recent concepts and early diagnostic features of leprosy. I am not a leprologist but a dermatologist who has had a basic interest in the disease, intensified by an opportunity to observe cases admitted to the U.S. Public Health Service Hospital at Carville.

We believe that leprosy is caused by the acid fast bacillus described by Gerhard Hansen in 1874. It has never been possible, however, to fulfill Koch's postulates. The organism has never been successfully grown on artificial media nor has it been possible to consistently transmit the disease to animals or to human volunteers by inoculation. We are not sure just how the disease is contracted, but in our present state of knowledge, the idea that the organism is transmitted from one individual to another is inescapable. The degree of contagion, however, must be mild. It is the consensus of opinion today that there are two circumstances that are most important and which, when combined, probably result in infection in more cases than any other circumstances: (1) household contact with an open case, and (2) exposure during childhood.

We believe that children are more susceptible to infection than adults. This does not mean that adults are not susceptible, but statistical studies of large series of cases in highly endemic areas point toward childhood contacts as the source of infection in the majority of

---

* Presented at the Seventy-fourth Annual Meeting of the Louisiana State Medical Society, May 22, 1954, in New Orleans

† Consultant Dermatologist, U. S. Public Health Service Hospital, Carville, La.; and Assistant Professor of Dermatology, Tulane University School of Medicine, New Orleans.

cases.[3] Leprosy tends to occur with much greater frequency among blood relatives, than among those related only by marriage. The disease is seldom contracted by employees in leprosaria, and conjugal infection of one spouse by the other is rare. Children born to infected parents will not develop the disease if removed from this contact at birth.

Cochrane[3] has shown that the chance of infection increases proportionately with the closeness of contact with an open case, so that far more cases have had household contact than more casual relationships.

Since the International Leprosy Congress in Havana in 1948, there has been rather universal acceptance of a classification which promotes better understanding. According to this classification there are three types of infection: (1) the lepromatous, (2) the tuberculoid, and (3) the indeterminate. (Table 1)

LEPROMATOUS TYPE

There are two polar types of leprosy, the lepromatous and the tuberculoid. The lepromatous cases represent that type of infection in which the host apparently has little if any resistance to the existence, multiplication, and dissemination of the bacilli. Numerous bacilli can readily be found in the skin nodules, and in fact, in apparently normal skin. The clinical course of the untreated lepromatous case is usually progressive and downhill, punctuated with intermittent episodes of what has been called lepra reactions. These reactions vary from bouts of mild fever with aggravation of existing skin lesions, to acute reactions with high fever, severe neuralgia, necrosis of skin lesions, and major extensions of the disease.[5]

It is unfortunate that the lepromatous case is the type most frequently seen in the U.S. and especially in the native born cases of Louisiana. Besides the early macules, the skin lesions tend to be (1) reddened, elevated, often well defined nodules which seldom ulcerate, (2) widespread multiple infiltrated plaques, and

TABLE 1

	LEPROMATOUS (usually open) *	TUBERCULOID (usually closed) *	INDETERMINATE
Host resistance to bacilli	Minimal	High	Variable
Bacilli in lesions	Many bacilli easily found	None or hard to find	None or hard to find
Prognosis	*Poor*—definite tendency to progression	*Good*—strong tendency to spontaneous regression	*Variable*—usually changes to one or other polar type
Type of skin lesion most frequently seen	Macules-nodules-diffuse infiltrations-urticaria like lesions	Hypopigmented macules-plaques	Macules
Anesthesia	May be independent of skin lesions	Co-existent with skin lesions	Variable
Pathology	Granulomatous structure—Lepra cells	Tuberculoid structure	Simple inflammation
Lepromin reaction	Negative	Positive	Negative or moderately positive
Wasserman reaction	45-60% positive	Negative	Variable
Organs affected	Skin-nerves, mucous membranes, eye, testicles	Skin and nerves	Skin and nerves

* The terms "open" and "closed" are used to indicate whether or not M. leprae are demonstrable in routine laboratory examinations of the skin and nasal mucosa.[4]

(3) diffuse infiltrations in the skin producing a thickened orange-peel appearance. Anesthesia is not as well defined to the skin lesions themselves as is so typical of the tuberculoid cases. Nerve involvement is a constant feature of lepromatous leprosy. It tends to be bilateral and symmetrical, i.e., both hands or both feet, but it does not necessarily conform to the pattern of skin involvement. Nerve damage leads to muscular atrophy and contractures. Trophic changes may result in absorption of bone in the phalanges of both hands and feet and perforating ulcers, usually of the feet. In lepromatous leprosy not only are the skin and nerves involved but later the mucous membranes of upper respiratory tract and the eye. The testicles are not uncommonly involved later in the disease, producing atrophy and gynecomastia. The lepromin reaction routinely is negative and the Wassermann is positive in 45 to 55 per cent of cases.[6]

TUBERCULOID TYPE

Tuberculoid leprosy is the opposite polar type from the lepromatous case. Here we find a high degree of host resistance. It tends to run a relatively benign course and spontaneous remissions are frequently seen. These normally are closed cases. *M. leprae* are seldom found by routine methods and it is believed there is much less danger of transmitting the disease to others. Reactions also occur in tuberculoid cases but less frequently than in lepromatous cases. These episodes are characterized by exacerbations of the skin and nerve lesions. During the tuberculoid reactions, *M. leprae* are demonstrated by standard methods from the nasal mucous membrane and skin lesions. Therefore, during this time the tuberculoid case must be considered an open case.

Tuberculoid cases are seldom accepted at Carville today, except during major reactions, and for surgery, or for any other procedure requiring hospital care. They are sent back to be treated in their home areas.

Histologically, tuberculoid cases show noncaseating epitheloid tubercles (tuberculoid).

Skin lesions in tuberculoid leprosy are protean in nature, but we most commonly find the macular lesions with hypopigmentation. The macules are usually few in number and dry. They are sharply defined, and frequently situated on the face, extremities, and buttocks. Tuberculoid plaques may be only slightly to moderately elevated, often only at the margins, with an irregular or pebbled surface, called minor tuberculoid lesions; or they may be larger, markedly elevated and thickened lesions with deeper infiltration of the skin and associated nerves, in which case they are termed major tuberculoid lesions. Tuberculoid lesions typically and regularly not only show anesthesia, well defined in the area of the lesion itself, but absence of the red flare in the histamine test and an absence of sweating in the mecholyl sweating test. It may seem strange that nerve damage is so early and so constantly a feature of the benign type of the disease. This is due to the fact, as Arnold[3] so ably points out, that "whereas in lepromatous cases the nerves act as a repository for bacilli, in the tuberculoid cases with the host putting up a vigorous inflammatory defense reaction, the nerves become a battle ground and suffer severe and early damage." There is a tendency for the infection to be restricted so that we frequently see unilateral nerve destruction.

The indeterminate case, of course, shows some evidence of both polar types and may eventuate in one or the other.

EARLY DIAGNOSIS

I am sure that all of us would recognize a far advanced case of leprosy but what we must learn to do is diagnose it early. Of course we must have a high index of suspicion and remember that we live in an endemic area. Then there are certain basic features that we should remember. In all cases of leprosy both the skin and nerves are affected early. In lepromatous involvement the skin manifestations are most often pronounced, with slower destruction of nerves and later mucous membrane involvement. But here we have the easy demonstration of bacilli in scrap-

ings from the lesions. In tuberculoid leprosy there are skin lesions and easily demonstrated nerve damage. The macule on the skin shows well defined and definite loss of sensation and anhidrosis.

DIFFERENTIAL DIAGNOSIS

It might be of some help to point out some of the most frequent diagnoses wrongly applied to cases of leprosy, thus denying early treatment to the patient.

1. Syphilis is probably the most outstanding erroneous diagnosis. This is actually not hard to understand as the appearance of the lesions may bear some resemblance, and especially since the Wassermann test is so frequently positive in lepromatous cases. Approximately one half the cases admitted to Carville have had a previous diagnosis of syphilis made at one time.[4] There are, of course, readily recognizable features which distinguish leprosy from syphilis: Secondary lesions of syphilis come on rather rapidly while the lesions of leprosy are much slower. Genital lesions are rare in leprosy. The outstanding difference is that nerve damage can always be demonstrated in leprosy and not in secondary syphilis. Furthermore, acid-fast bacilli are easily demonstrated in scrapings from lepromatous lesions. With the modern treatment of syphilis it is inexcusable to continue to treat a supposedly syphilitic case with no response of the skin lesions to adequate amounts of penicillin. Leprosy should be one of the diagnoses considered, a thorough search for nerve involvement made, and both a biopsy and scrapings for acid-fast bacilli performed.

2. The cutaneous manifestations of Boeck's sarcoid may closely resemble the cutaneous manifestations of leprosy. It is similar in its slow evolution and in its histopathological picture (tuberculoid leprosy). Bone changes may be present in both diseases. In sarcoidosis, however, there may be findings in the lung, and the lymph node enlargement seen rather often in sarcoid is seldom seen in leprosy. It is, of course, the associated nerve changes, and the almost invariable anesthesia of tuberculoid leprosy that makes the differential diagnosis, as well as the finding of acid-fast bacilli in scrapings from the lepromatous cases.

3. Syringomyelia is another condition that often causes confusion, principally because in this condition, as in leprosy, there is loss of sensation to pain, heat, and cold, particularly in the hands, with atrophy of the muscles and trophic changes—painless burns and bone absorption resulting in loss of fingers and toes. There are, however, no primary skin lesions in syringomyelia so that if there are skin lesions the diagnosis is not too difficult. The skin is nearly always involved in an early case of leprosy. If confusion exists, however, it is helpful to remember that syringomyelia is a central cord lesion and leprosy involves the nerves peripherally and actually in the skin. There is no thickening of the nerve trunk in syringomyelia, as is so common in leprosy. Tests such as the histamine test or the methylcholine sweating test demonstrate nerve damage in the skin in leprosy and not in syringomyelia.

It is well to remember in any neurological condition in which leprosy is being considered that thickening of nerve trunks, especially if nodular, is usually due to leprosy; also, that leprosy only very rarely causes loss of tendon reflexes.

Trophic ulcers in leprosy are secondary lesions as they are in any other disease which can produce them such as C.N.S. syphilis, diabetes, syringomyelia, peripheral vascular disease, or nerve injury.

Other diagnoses which have been wrongly made on leprosy patients include tinea circinata, tinea versicolor, achromia parasitica, vitiligo, pityriasis rosea, psoriasis, urticaria, erysipelas, erythema nodosum, erythema multiforme, neurofibromatosis (von Recklinghausen's disease), granuloma annulare, xanthoma tuberosum, and leukemia cutis. Leprosy seldom gives the typical clinical appearance of any of the above diseases but the skin lesions may look enough alike to be confusing.

EARLY LESIONS OF LEPROSY

We can see by the above list of diseases that the skin manifestations of leprosy

are varied and may not be typical in their appearance. However, if one is to make an early diagnosis, certain lesions should arouse suspicion. What then are the early lesions and where do they occur? The macule has long been considered the principal early lesion in leprosy. This occurs as a flat hypopigmented area, not a true milk white patch as in vitiligo, and it may have an erythematous border. These early macules may become infiltrated to form plaques. The center may regress, the borders becoming infiltrated and extending. Nodules often develop which are reddened, elevated, and fixed in the dermis and closely resemble lesions of lymphoblastoma or leukemia or early keloid formation. Infiltrations may be localized as in the ear lobes, presenting diffuse thickening.

If it is borne in mind that the skin and nerves are almost invariably affected at the same time, diagnosis is more readily made. The early macules are almost always associated with loss of sensation. First to be lost is the ability to distinguish heat and cold, next in order are light touch, pain, and deep touch perception. The most common large nerves to be involved are the ulnar and the superficial peroneal, resulting in sensory, motor, and trophic changes in the corresponding hand and foot. The ulnar nerve especially may be thickened and nodular and may be palpated behind the elbow as it passes between the olecranon and the medial condyle of the humerus. Loss of sensation is associated with disturbances of the sweat glands and hair follicles. The skin is apt to be dry and hairless. The skin of the lower extremities especially becomes ichthyotic and discolored. Cyanosis and coldness of the extremities suggest some loss of the neurovascular mechanism.

Certain areas of the body become involved more regularly with cutaneous lesions of leprosy than others and certain areas seem to be exempt from clinical involvement. The lobes of the ears, the alae nasi, the cheeks, the forehead, especially the supraorbital areas, the buttocks, and elbows are apparently sites of predilection for nodules, although they occur also on the trunks and extremities.

Certain areas of the body seem to remain exempt from lesions until late in the disease. These include the axilla, groin, neck, cubital, popliteal, the external genitals, the palms and soles.

SYMPTOMS

What are the symptoms that may bring patients to the doctor other than a skin manifestation which is commonly unnoticed or disregarded? They complain of paresthesias, of the hands and feet falling asleep or being heavy and swollen. Not infrequently they present themselves with a burn of the extremity which they did not feel when it occurred.

Lagophthalmos, droop of an angle of the upper lip, atony or slight atrophy of the muscles of the interosseous spaces or of the thenar or hypothenar eminences and thickened nerve trunks may be early neurological signs of disease.[7]

Since the onset of leprosy is insiduous and the early lesions are frequently unnoticed by the patient, and symptoms are minor or thought to be insignificant by both the patient and the doctor, we must be as careful as we are in the early diagnosis of cancer and keep our index of suspicion high. There are other ways of finding out the early case which should be emphasized and popularized. If we can educate the patient and the family and the public to realize that leprosy is just another disease then we can get cooperation from the patient and the family and close contacts. They can be examined periodically with the intent of examination clearly understood by both contact and doctor. Social workers can help more effectively and early cases become recognized. Treatment may then be started and the patient prevented from developing disabling and disfiguring sequela. The danger to other contacts is thus minimized. In this way we can stamp out endemic areas in Louisiana and the United States.

LABORATORY TESTS

The laboratory tests that are helpful should be well known to all doctors.

The finding of acid-fast bacilli in the

skin is the only unequivocal proof of the diagnosis of leprosy. This may be done in two ways, either by making scrapings from the skin lesions or by biopsy. The simplest way is to take a razor blade and squeezing the skin tightly with the fingers to prevent bleeding, make a superficial incision through the epidermis, then with the edge of the blade scrape serum and tissue juices from the side of the cut. This is spread thin on a glass slide and stained with the Ziehl Neelsen method. Scrapings from the nasal mucous membranes are not as reliable because other acid fast organisms are found there. Scrapings are also unreliable from ulcers, smegma producing areas, and from the dry epidermis itself.

Concentration studies of 3 by 5 mm. skin biopsies reveal *M. leprae* in all cases of leprosy. This is not a routine laboratory procedure. It is, however, being used and studied at Carville.

Biopsy is, of course, of considerable help and should be done on all suspicious skin lesions, using both the hematoxylin-eosin and acid-fast stains.

The histamine test is a reliable indication of intracutaneous, nerve damage. A drop of 1:1000 histamine diphosphate is placed on the skin inside the area to be tested and another drop outside. A pinprick is made through each drop. At each site a wheal will form, but the red flare about the wheal on the normal skin will not be present in the area where intracutaneous nerves have been destroyed.

The methylcholine sweating test is applied by painting both the involved skin and some of the normal skin around it with Minor's solution. This is 2 per cent iodine and 10 per cent castor oil in absolute alcohol. Over this is dusted powdered cornstarch. Then 0.1 cc. of a 1 per cent solution of methylcholine (mecholyl) chloride is injected at the border or in both the normal and involved areas that have been painted. Each drop of sweat produced will moisten the dry iodine starch mixture and turn it a deep blue. This test is not reliable on the face and is useful primarily to differentiate the early macules of tuberculoid leprosy from other lesions.

The lepromin reaction is actually not a diagnostic test for leprosy. It is useful only to help distinguish the tuberculoid from the lepromatous type and in this respect it is of prognostic value. The test material is not available commercially. It consists of a phenolized, boiled suspension of ground-up lepromatous granulomatous tissue in physiological saline solution. A small amount is injected subcutaneously in the forearm of the patient and read in three weeks. A nodule greater than 5 mm. in diameter at the test site with the histological picture of tuberculoid leprosy (Mitsuda reaction) indicates a benign or tuberculoid type of infection. The malignant or lepromatous type of disease gives a negative response in three weeks.

THERAPY

There is much interest in leprosy today. Since the beneficial effect of the sulfone drugs has definitely been established many more drugs have been proposed. New drugs that have been found useful against the Koch's bacillus and hold promise of affecting the Hansen's bacillus are constantly being tried. So far none of these has been proved to be more effective than promin or diasone, but no doubt a new drug soon will be found that will be even better and faster for patients with leprosy.

The principal interest at the International Congress of Leprosy, held in Madrid last summer, was centered about the possibilities of BCG immunization. In 1939, Fernandez [5] found that of 123 children who were negative to tuberculin and lepromin and then vaccinated with BCG, the tuberculin was reversed to positive in all but one and that, 92 per cent developed a positive lepromin reaction; also that twelve years later, in 1951, not one of a group of children so vaccinated had developed leprosy in spite of continuing to live with infected parents. It has been found that it is possible to give BCG by oral administration. Some observers feel that BCG administration may actually prevent infection or at least modify the disease should it occur so that it would

be of the tuberculoid variety.[8] Enthusiasm is probably much higher about this subject than facts would justify. It will take many years to evaluate the results but it will be interesting to follow this investigation.

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THE LABORATORY DIAGNOSIS OF LEPROSY *

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Although leprosy is not a common disease in the United States, Louisiana is considered to be one of the few states in which the disease is endemic. If leprosy is to be diagnosed sufficiently early for the patient to obtain the maximum benefit of modern treatment, the physician must have a fairly well developed index of suspicion. The protean forms in which leprosy may appear may bring the sufferer to almost any of the specialists in medicine, and the pathologist especially must be keenly aware of its many histopathological variations.

IMPORTANCE OF TISSUE EXAMINATION

The recognition of the disease by the pathologist is particularly significant inasmuch as many patients with obscure skin and/or neurological diseases eventually submit to one or more biopsies for histological interpretation. Further, tissue examination is of more significance in the diagnosis of leprosy than in most other diseases, for in leprosy there are few reliable correlative tests to assist in the diagnosis. The successful culture of the *Mycobacterium leprae* has yet to be accomplished. Confirmation of the claims of success of a few workers has been unsuccessful.

To illustrate the importance of tissue diagnosis and the necessity for the inclusion of leprosy in the clinician's and pathologist's differential diagnosis, the following two cases are cited:

Case No. 1: A middle-aged man was first admitted to a general hospital in a southern city with fever, malaise, and an erythematous, nodular rash of his face and arms. A diagnosis of fever of undetermined origin was made, and he was given penicillin and sulfa drugs. He was discharged as improved; however, he was readmitted six months later having had a recurrence of symptoms and enlargement of lymph nodes in axillae and groin. The skin nodules were again noted, and a biopsy of one of them was reported as erythema nodosum.

During the next eight months there were two more admissions, and during the latter one a second biopsy was performed which was reported as toxic dermatitis. Two years later the patient was again admitted complaining of fatigue, weight loss, fever, and chills, and it was noted that the nose had become deformed. The skin lesions were numerous and widely distributed. A third biopsy was reported as nonsuppurative panniculitis. A slide from a lesion was seen in consultation and a diagnosis of lepromatous leprosy was made. Acid-fast stains demonstrated *Mycobacterium leprae* in the tissue.

Case No. 2: A 65-year-old man entered a general hospital in the southwest. He had pigmented macular lesions of the face and extremities and areas of cutaneous anesthesia. These lesions were said to have been present for about twenty years, and other members of the family had a similar condition. The clinicians suspected leprosy and a biopsy was performed.

The laboratory diagnosis of the tissue was lupus vulgaris, because acid-fast organisms and globi were lacking. The clinical staff was dissatisfied with this impression. The microscopic sections when seen in consultation were found to be excellent examples of tuberculoid leprosy.

This case illustrates especially well the results of the inexperience of some pathologists with this type of leprosy. Acid-fast organisms are exceedingly scarce or absent in the tuberculoid type, and the

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histologic picture strongly suggests sarcoidosis or tuberculosis.

LABORATORY DIAGNOSIS

The laboratory procedures which are the most likely to be diagnostic of leprosy are actually limited to (1) smears from skin and nasal mucous membrane scrapings, and (2) examination of microscopic sections from biopsy specimens of skin lesions or peripheral nerves.

Serological, biochemical, and hematological procedures do not offer any pathognomonic diagnostic information in this diease at present. It is of importance, however, to be aware of the fact that there is a false positive serological test for syphilis in the majority of cases of lepromatous type leprosy sometime during the course of the disease. Reuben L. Kahn [1] has studied the universal serologic reaction in these patients and felt that repeated determinations would serve to indicate clinical and immunologic trends in these patients. One of our laboratories is studying the treponemal pallidum immobilization test in leprosy; however, it is too early to draw conclusions from this work.

A significant number of cases with positive serologies also have abnormal cephalin-cholesterol as well as thymol turbidity reactions. It has also been observed that there are changes in the serum proteins resulting in increased total globulins with a lowering of the albumin: globulin ratio.[2]

It is not within the province of this paper to discuss the controversial lepromin test.

The selection of the sites from which smears are to be obtained is extremely important if an adequate specimen is to be obtained. Areas of infiltration or the margins of macules should be chosen. The skin is compressed between the fingers until it blanches. A minute incision is then made with the corner of a single-edged razor blade or scalpel into the dermis. The walls of the wound are then scraped to obtain tissue fragments which are spread on a new, recently washed glass slide. The usual Ziehl-Neelsen acid-fast stain is used. If no skin lesions are noted, the ear lobes are usually selected as a test site. Abrasion of the mucosa of the posterior nasal fossa following suitable topical anesthesia often yields excellent smears containing myriads of *Mycobacterium leprae.*

In the *lepromatous type* usually there are few to many acid-fast organisms in the smears. In the *tuberculoid type* it is very rare to find acid-fast organisms in the smears, except, perhaps, during an acute exacerbation. In the indeterminate type, organisms are rarely present.

In our opinion, the procedure offering the best opportunity for definitive diagnosis is a biopsy sufficiently large to include subcutaneous tissue performed with a scalpel rather than a skin punch. We prefer fixation in 10 per cent formalin solution, and the tissues are stained routinely with hematoxylin and eosin with the Fite, Cambre and Turner [3] modification of the Ziehl-Neelsen stain rather than the Kinyoun modification which stains *Mycobacterium leprae* poorly.

In the lepromatous type the dermis is infiltrated by large mononuclear phagocytic cells with pale, granular cytoplasm. These are the so-called lepra cells. They are distributed principally around capillaries and lymphatics, nerves, and accessory skin structures. Large round or oval spaces may be present. Acid-fast stain reveals these spaces to contain aggregations of lepra bacilli and represent the classic globi. The cytoplasm of the lepra cells also contains innumerable organisms.

Varying numbers of lymphocytes and plasma cells may be present. No giant cells, caseation, suppuration, or necrosis is seen unless some complicating factor has altered the picture. The histopathological features of the *lepromatous type* of leprosy are sufficiently pathognomonic that little difficulty is diagnosis should be experienced by one who entertains the possibility in his differential diagnosis.

The predominant feature of the *tuberculoid type* is the small, multiple granulomatous foci strongly suggesting sarcoid or cutaneous tuberculosis. The tubercles

contain numerous Langhan's type multinucleated giant cells. There is no caseation; however, numerous chronic inflammatory cells are present. The tubercles are found in the vicinity of blood vessels, lymphatics, nerves and in the subcutaneous tissue. *Mycobacterium leprae* are seldom seen in the tuberculoid type. The histopathological features of the *tuberculoid type* closely mimic other granulomatous conditions of the skin, and careful evaluation of the clinical history and physical examination is necessary before a definite diagnosis. Conditions which may simulate tuberculoid leprosy histologically are sarcoid of the skin, tuberculosis, granuloma annulare, beryllium granulomas, and some foreign body granulomas.

The *indeterminate type* may be histologically nonspecific. Inflammatory reaction in the dermis may consist of only banal infiltration of lymphocytes and monocytes around capillaries and nerves. Unless alerted by the clinician, the pathologist's index of suspicion must be very high if he requests that sections such as this be stained for leprosy bacilli.

CONCLUSION

In conclusion, we wish to emphasize that the pathologist plays a major role in the diagnosis and classification of leprosy. In order to successfully diagnose leprosy, he must develop a high index of suspicion and he must be sure that the acid-fast staining technique used in his laboratory will stain the lepra bacilli. He must realize that indeterminate leprosy may be histologically as nonspecific as chronic dermatitis. Finally, we wish to especially emphasize that several granulomas of the skin may be histologically indistinguishable from tuberculoid leprosy, and every patient with such histologic pictures should be clinically studied for leprosy.

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MODERN APPROACH TO THE PUBLIC HEALTH ASPECTS OF LEPROSY *

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It is the purpose of this paper to present some of the salient points about leprosy as they pertain to history, epidemiology, and the modern approach to the public health aspects.

In the popular mind, no other disease is regarded with deeper horror than leprosy. No other is believed to be more contagious or to work greater and more revolting physical havoc. Although leprosy is one of the oldest known diseases of mankind, it is still regarded by some medical men, as well as laymen, as a mysterious and horrible affliction. The unfounded fears and revulsion, born largely of ignorance, have hindered scientific study and the dissemination of accurate knowledge. Victims are not only feared and shunned with almost psychopathic dread, but are also subjected to the humiliation caused by the widespread belief that their condition is a shameful one due to unclean living. It is not, however, a disease of filth, race, social condition, moral transgression, or due to a curse of God, but rather is an infectious disease caused by the *Mycobacterium leprae* and undoubtedly spread by contagion. It occurs among the washed and the unwashed, the saints and the sinners of every race, as well as at every social and economic level. Half or more of those under treatment in the Public Health Service Hospital at Carville, Louisiana, the National leprosarium, show no disfigurement and could pass unnoticed in any public gathering, while a high percentage of the remainder suffer only minor disfigurements or scars.

Since the disease is prevalent nearly everywhere in the tropics and the subtropics, and is endemic in Louisiana as

* Communicable Disease Center, Public Health Service, U. S. Department of Health, Education, and Welfare, New Orleans, Louisiana. Presented at the Seventy-Fourth Annual Meeting of the Louisiana State Medical Society, May 21, 1954, in New Orleans.

well as in Texas and Florida, it has more than a passing interest and importance to all practicing physicians in Louisiana. Any part that we may play in this post-war world must include a recognition of the extent of the leprosy problem as well as a knowledge and application of accepted public health measures.

HISTORY OF SPREAD OF LEPROSY

The most prevalent belief is that leprosy, or Hansen's disease, had its origin in the upper reaches of the Nile, from where it spread to other parts of the world by way of trade routes, permanent migration of people, the slave trade, and movements of armies. (Figure 1).

Figure 1

There is considerable evidence to suggest that the disease spread from Africa to Asia Minor, from Asia Minor to Asia, and from China to Japan, Malaya, the Pacific Islands, and Australia.[1]

Leprosy was introduced into Rome by the return of Pompey's troops from Asia Minor around 62 B.C.

The disease was brought into Spain by Roman legionnaires and colonists during the fifth and sixth centuries. The Spanish troops in turn carried the disease into France during their invasion around 700 A.D., and from there it spread through Europe, including Norway and Sweden.

It is assumed that the disease did not exist in the New World (Western Hemisphere) until after the arrival of Columbus, and that it was introduced by individuals who had become infected in the older European foci. Later, cases were introduced from highly endemic areas in Africa through traffic in slaves. It was brought to South America as early as 1543, and soon thereafter a leprosarium was established in Columbia. It is estimated that in Columbia at the present time there are 12,000 to 15,000 cases. There is evidence of its presence in Mexico also about 1543. It was reported in the West Indies as early as 1687, and some time later in the Canadian Provinces of Nova Scotia and New Brunswick which were settled by the French.

The earliest available reference to the disease in the United States has been found in Roman's *Concise Natural History of East and West Florida*, published in 1776, in which reference is made to the occurrence of the disease in the province as early as 1758. (Figure 2).

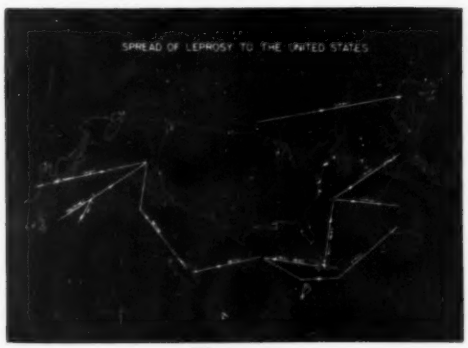

Figure 2

The Negroes who were imported into the Americas as slaves came from that part of the African continent which today is one of the most heavily infected regions known.

About 1848, leprosy was introduced into Hawaii, supposedly by the Chinese, and it rapidly established itself there among the natives. The first local case was seen in 1853, and during the following ten years the disease spread considerably. By 1874, there were 11.88 cases per 1,000 population.

GEOGRAPHICAL DISTRIBUTION OF LEPROSY

Today, leprosy is limited chiefly to the tropics and subtropics and is mainly concentrated in India, Central Africa, China, and South America.[2] The present esti-

mated distribution of cases is shown in Figure 3. Since there are an estimated 3

Figure 3

to 5 million cases in the world today, this disease still remains a real problem.

The extent of the disease in the United States is difficult to determine because many cases are not recognized, many cases are not reported, and no country-wide, case-finding program has been conducted. (Figure 4). Some idea as to the

Figure 4

prevalence of the disease in this country can be obtained from the number of patients admitted to the Public Health Service Hospital at Carville, Louisiana, during the thirty-year period, 1921-1950, which averaged approximately 46 patients per year and totalled 1,371. During the past three years an average of 35 patients per year have been admitted from the various States.

Since the establishment of the National leprosarium at Carville in 1921, patients have been admitted from 39 of the 48 States and from the District of Columbia. A majority of the patients (80.2 per cent) came from the states of California, Texas, Louisiana, and New York. Nearly two-thirds (64.3 per cent) were admitted from California, Texas, and Louisiana.

Physicians and health officers must recognize the fact that individuals afflicted with this disease may appear in any section of the country (Figure 4), and should always hold a high index of suspicion for leprosy in obscure skin or nerve cases.

A large per cent of the patients admitted to the National leprosarium contracted the infection outside of the United States; 43.5 per cent were of foreign birth. Of the 409 admitted from California and New York, 85 per cent were of foreign birth. Many of the patients of native birth contracted the disease while residing in endemic areas in foreign countries.

There is a definite tendency toward concentration of the disease in limited areas. Figure 5 shows that a majority

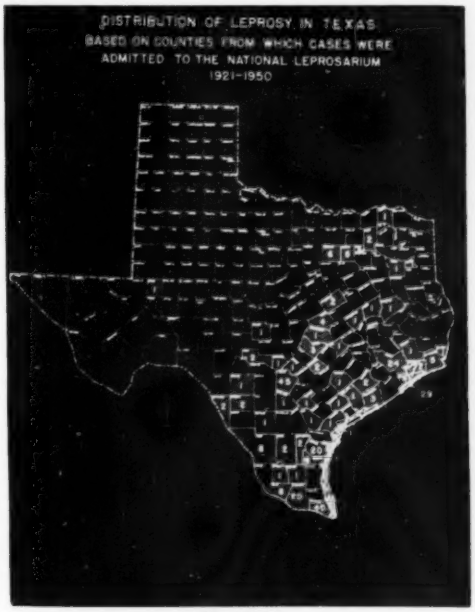
DISTRIBUTION OF LEPROSY IN TEXAS
BASED ON COUNTIES FROM WHICH CASES WERE
ADMITTED TO THE NATIONAL LEPROSARIUM
1921-1950

Figure 5

of the patients admitted from Texas came from counties located in the southeastern section of that State.[3] Patients have been

admitted from 52 of the 254 counties. Only 24 per cent of the patients admitted from Texas were of foreign birth.

Figure 6 shows that 95.1 per cent of

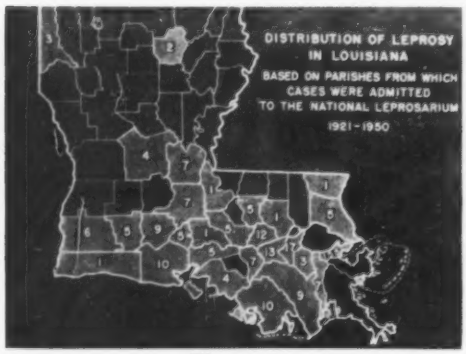

Figure 6

Louisiana patients admitted to the Public Health Service Hospital at Carville came from parishes located in the southern half of the State. Of the 320 patients admitted during the thirty-year period, 1921-1950, 155, or 48.4 per cent, came from Orleans Parish, only 4 per cent of which were foreign born. During the years 1894 to 1921, the twenty-seven year period of State operation, 321 persons were admitted from Louisiana and 17 from other States. A total of 658 patients from Louisiana were treated in the hospital at Carville from 1894 to May 1, 1954, which, together with 26 known cases not treated at the hospital, makes 684 cases of leprosy. It might be of further interest to know that of the Louisiana patients admitted to Carville approximately 33 per cent had onset of the disease more than five years prior to admission, and approximately 14 per cent had onset more than ten years before admission.

Although California is not an endemic State, it is included in this discussion since it can be seen that in this State also occurrence of cases has been fairly concentrated in a couple of areas. (Figure 7). A majority of the patients (63.9 per cent) were admitted to the National leprosarium from the two counties of San Francisco and Los Angeles. A total of 524 cases were diagnosed between 1921 and June 30, 1953. Of these 524 patients,

DISTRIBUTION OF LEPROSY IN CALIFORNIA
BASED ON COUNTIES FROM WHICH CASES WERE
ADMITTED TO THE NATIONAL LEPROSARIUM
1921-1950

Figure 7

50 per cent were born in Mexico, 29 per cent in other countries (China and the Philippines especially), and 21 per cent in the United States.[4]

Patients have been admitted from only 12 of the 67 counties in the State of Florida. Only 14 per cent have been of foreign birth.[5]

Even within a city the disease may be concentrated in one or two sections. Such a concentration has occurred within the city of Key West, Florida, where a total of 65 patients resided while their disease was active. The address of one has not been recorded, but of the remaining 64, 55, or 85.9 per cent, resided in a relatively small area of the city, and 60.9 per cent resided in a smaller area approximately five blocks square within this larger area.

The conclusion which one may draw from the figures presented is that, although a large number of cases have been imported into California and New York, there has been little tendency for leprosy to spread among natives of either of these two States, even including those of the Oriental race. On the Pacific Coast leprosy has been primarily an alien disease.

The same is apparently true of New York State. In Louisiana, however, the disease occurs and spreads among native-born individuals. Also, in Texas, leprosy exists and spreads among the native-born, having its origin mainly in Mexico, and West Indies, and Louisiana.[6]

The disease appears to be more or less stationary in the United States. There have been neither increases nor decreases of any great importance.[7] The trend in Louisiana has been downward while that of Texas is rising. However, the apparent trends in these two States may be due to the fact that in Texas medical men are more vigilant in detecting cases and isolating them at Carville, while in Louisiana not all of the cases are being recognized. Like all epidemic diseases leprosy runs a course which, when represented by a curve, shows a fairly rapid increase after implantation into a favorable environment until a plateau is reached. During this period there is a fairly even number of cases from year to year, which is followed by a very gradual decline until finally the infection dies out. In leprosy, however, it takes generations, or even centuries, for completion of the curve.

THERAPEUTIC ADVANCES

During the past decade men of science have unlocked and brought under control the mysteries and secrets of atomic energy, and have brought into the home the wonders of television. During this same period the world moved toward modernizing and humanizing the medical and social problems connected with leprosy. Significant therapeutic advances have occurred with the introduction of the sulfone drugs (promin, promizole, diasone, promacetin, and sulfetrone).[8] Clinical improvement of specific skin and mucous membrane lesions is definite and universal. Mucosal lesions respond to treatment very readily and usually earlier than cutaneous lesions.[9] The healing of these results in relief of nasal obstruction, epistaxis, dyspnea, and hoarseness. Emergency tracheotomies are no longer necessary. Oral lesions improve so rapidly that, whereas before the advent of sulphones an average of 3,000 oral treatments were necessary at Carville annually, now only an occasional oral treatment is given. Clinical improvement is progressive and sustained, and is followed by a reduction of leprosy bacilli in the skin lesions, but three to five years of treatment are usually required before complete disappearance of the bacillus is obtained. Relapse may occur unless the patient continues to take at least one diasone tablet daily after he has been discharged as arrested.

Optimistic changes in thinking and concept among those of us who work intimately with leprosy have resulted in significant advances in the modern public health and social approach to the problems which confront us. Today, with the effectiveness of the newer sulphone drugs, we see in these patients not only an astonishing physical improvement, but also a stronger desire to live as others live. More than ever before they want to maintain their homes and personal contacts with their families. They want to prepare themselves for a better job after they are discharged from Carville. The Public Health Service has established a fine educational and recreational program at the hospital to prepare the individual for some useful and gainful occupation upon discharge. Occupational and physiotherapy, and reconstructive and plastic surgery have taken on a new meaning for the patient.[10]

Unfortunately, neither the manner of transfer of the causative organism nor the portal of entry into the new host is known. The organism apparently has never been cultured and all animal inoculations have been failures. However, it is generally accepted that leprosy results from contact with an infected person, or possibly with contaminated articles, and it follows that prevention of infection requires avoidance of such contact. The control of leprosy, therefore, entails primarily the detection of all sources of infection (case finding) and the control of these cases in such a way as to prevent trans-

mission of the disease to well people.

There are two sources of infection to consider: (1) the bacteriologically positive lepromatous case, and (2) the arrested lepromatous case which may reactivate and again become bacteriologically positive. It is indeed gratifying to see that the tendency today is to consider each case on its own merit, and that the tuberculoid-type cases are no longer considered infectious to the point where isolation is necessary.

Patients with the lepromatous form have mucosal lesions such as ulcers, nodules, and infiltrated plaques in the nose, throat, and mouth. These active lesions contain large numbers of bacilli which are discharged easily with the secretions or with the shedding of scabs from the nostrils. On the other hand, the tuberculoid-type represents high resistance to the existence, multiplication, and dissemination of the bacilli and, therefore does not manifest these mucosal lesions.

The present control program in Louisiana, to be effective, must have the cooperation of members of the State Medical Society as well as that of the patient and members of his family. It will continue to be difficult to obtain this desired cooperation until the entire public and the medical and nursing professions have been enlightened as to the real nature of the disease and to the current accepted beliefs relative to its transmission. The entire population must regard this disease simply as a communicable disease, transmitted from person to person by contact, and must be aware that all cases are not considered as sources of infection and that the noninfectious type (tuberculoid) may continue a normal existence, including treatments at general or private clinics, without endangering others.[11] The patient himself and the members of his family must be told the truth and instructed relative to the various factors of this disease. Such instruction will assure better cooperation, and through this type of cooperation other early cases will be discovered.

Needless to say, all active lepromatous cases should be referred to the Public Health Service Hospital at Carville for treatment, since it is dubious that any of these cases can be satisfactorily isolated in the home. The advantages obtained by treatment in Carville therapeutically so outweigh those obtained from treatment elsewhere that all active lepromatous cases should be urged to enter this hospital.

As there will always be cases of leprosy not hospitalized in Carville but in need of treatment (AWOL, tuberculoid, and medically-discharged positive cases), every attempt should be made to assure that these individual cases get treatment as adequately as possible, either in clinics or by private physicians. To this end a biweekly clinic is held at the U. S. Public Health Service Hospital in New Orleans, Louisiana, where examination, consultation, and treatment may be obtained free of charge.

SUMMARY

The history of leprosy reveals its occurrence in every climate but also indicates its decline or disappearance from most of the temperate zone.[1] Today it is chiefly a disease of the tropics and subtropics.

Sulphone therapy has materially altered the outlook for the leprosy patient and the curability of the disease, but further research toward development of more effective therapeutic agents is urgently needed. Search must continue for a more effective and specific drug against this acid-fast bacillus which is still causing so much fear, anxiety, distress, and economic chaos in the lives of millions of men and women.

The only available means of preventing leprosy is by control of the active lepromatous cases in order to reduce the exposure of healthy individuals.

Along with the new chemotherapy must come a new social outlook and attitude toward the disease, thus eliminating the social stigma of leprosy.

A modern and intelligent approach to the public health aspects of leprosy implies training of adequate medical and nursing personnel; a national campaign

of publicity; increased interest and vigilance, with a high index of leprosy suspicion among pediatricians, practitioners of general medicine and surgery, neurologists, orthopedists, dermatologists, and others conducting special clinics for children. In the words of Sir William Osler: "Yesterday is but a dream and tomorrow is only a vision. But today well lived makes every yesterday a Dream of Happiness and every tomorrow a Vision of Hope. Look well, therefore, to today!"

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MONILIA (YEAST-LIKE) INFECTIONS OF THE SKIN AND MUCOUS MEMBRANE *

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IRVING BORDELON, M. D.
KENNETH SNIDER, M. D.
NEW ORLEANS

Since the advent of the newer wide spectrum antibiotics and the frequently resulting mucous membrane irritations, there have been an increasing number of cases of *Candida albicans* infections following their use. Due to an entirely different set of factors, there has been a like increase in *C. albicans* skin infections. Chief among these factors are more powerful detergents and cleaning solutions, the modern passion for cleanliness, and the fact that the young housewife must do her own work. Again, in consequence of the lengthened life span, we find yeast infections associated with such geriatric problems as diabetes, false teeth, atrophic tissue changes, and carcinoma.

INCIDENCE

Investigations during the last five years have helped clarify our understanding of the pathologic importance of the yeasts. The incidence of pathogenic yeasts was investigated by Marples[1] et al., with the finding of *Candida albicans* in the mouth of approximately one third of a group of 278 children, and one half of a group of 137 young adults. In about 31 per cent of 188 stool examinations the same organism was cultured. In another group of a hundred children, McGovern[2] et al. found *C. Albicans* in the mouth in 13 per cent and in the rectum in 6 per cent. No strains of *C. albicans* were isolated from the skin of the fingers of either children or adults in Marples' cases, and the incidence of the organism was unrelated to the nutritional state or the presence or absence of enlarged tonsils. It was, however, increased among adults with artificial dentures. I have heard both Drs. Benham and Hopkins[3] state on many occasions that this organism is a normal inhabitant of the mouth and intestinal tract, but not of the skin. One may conclude that, for the most part, *C. albicans* infections are endogenous.

RELATIONSHIP TO ANTIBIOTICS

There are many theories as to the apparent relationship between administration of wide spectrum antibiotics and supra-infection with antibiotic resistant micro-organisms including both fungi and bacteria.

1. One theory advanced by Harris,[4] in 1950, maintained that the normal flora supplies certain nutritional requirements to the host. In the event of a disturbance of equilibrium such as results from antibiotic therapy there is a lowering of tissue

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resistance or actual tissue breakdown, affording a portal of entry for organisms which are always present, but kept in abeyance by a normal, healthy mucosa. One investigator, Harris,[4] in 1949 and 1950, singled out the nutritional factor thus disturbed as Vitamin B complex.

2. A second theory advanced by Miller,[5] in 1951, maintained that the administration of antibiotics upset the equilibrium in which normal flora exist. There resulted a suppression of susceptible micro-organisms and a substitution of resistant ones, which multiply to the point of overwhelming the tissues. Kligman[6] confirmed this in 1952, and found further that there seemed to be a suppression of gram positive organisms and a substitution of gram negative ones.

3. A third theory seeks to incriminate the antibiotics as directly stimulating the growth of *C. albicans.*

The suppression substitution theory and the nutritional disturbance theory are not mutually exclusive and are probably both true.

Typical thrush in infants or older children has little if any relationship to the antibiotics. This holds true for thrush in adults. However, investigators uniformly report that in adults who have received antibiotic therapy, usually over long periods of time, there are undesirable side effects including glossitis, stomatitis, sore throat, black hairy tongue, proctitis, pruritis vulvae and ani, and diarrhea, due in many instances to tissue invasion by *Candida albicans.* It has been stated above that tissue invasion with *C. albicans* occurs after long term therapy. However, diarrhea or anal and vaginal involvement may occur early and may be very severe with distressing symptoms of burning, itching, and vaginal discharge. It has been the experience of many investigators that the application of antibiotics to the skin is not followed by the appearance of this organism. In the light of theories we have presented above this would seem obvious since *C. albicans* is not a normal inhabitant of skin tissue. *C. albicans* infections of the skin are not by any means a rarity, but unless already present, there seems to be little relationship to antibiotic therapy. Dermatitic skin has been found to possess this organism after local antibiotic therapy, but since Klingman[6] has shown that stasis ulcers with *C. albicans* as a contaminant have been known to heal with continued use of these antibiotics locally, it is not felt to be of any great moment. It should be pointed out that the findings of *C. albicans* in diseased tissue does not necessarily prove this fungus to be the cause of the condition.

RULES FOR USE OF ANTIBIOTICS

From our own experience we have established the following rules for the use of wide spectrum antibiotics in patients:

1. Give antibiotics over short periods of time and thus allow normal flora to regenerate naturally.
2. Stop any one certain antibiotic after its use for several days with no favorable result.
3. Instruct patients as to the nature of possible side effects and discontinue the drug if they appear.
4. Use milk, buttermilk, lactonex tablets, along with this drug, to help maintain a more normal intestinal flora. B_{12} vitamin tablets are also of value.
5. Do not use these drugs promiscuously.
6. Look for other underlying pathology when yeast infections appear.

In all acute severe reactions we give B_{12} by injection or orally. Milk, buttermilk, or lactonex tablets are also given, in an attempt to restore a more normal bacterial intestinal flora.

ORAL CASES

In the oral cases with severe stomatitis, potassium permanganate 1-10,000 aqueous solution mouth washes are used alternating with (diluted at first) cepacol mouth washes and a soft bland diet, and gentian violet for a limited use when the acute stages have begun to subside. Black hairy tongue is difficult to clear up and fortunately most cases regress spontaneously. Persistent cases are curetted and painted with 15 per cent phenol, and neutralized

with alcohol once a week. A few respond to gentian violet and cepacol. For anal and vaginal conditions we use oatmeal, soda, or aveeno baths, and little in the way of local applications until some improvement has occurred, when ceepryn vaginal suppositories, or gentian violet, or propionic gel is employed with daily alkaline douches. Gentian violet has been more irritating to vaginal mucosae than ceepryn in our experience. When trichomycosis infections are also present, devegan tablets are alternated with the yeast destroying drugs.

Thrush in infants is not nearly so common as it once was. It occurred in epidemics on infants wards, in the past, especially during a strange period of medical thinking when it was the custom to thoroughly clean out the mouth with gauze following each feeding. Mothers occasionally acquired the infection on the nipples from their nursing infants in this manner. Now thrush has given way to circumoral skin infections in infants and young children who drool a great deal. This eruption is a bright red, wet, sharply defined lesion surrounding the lips with an abundance of budding yeast cells and mycelia which are easily recovered on scrapings from the margins. In adults, perleche—sometimes with thrush—is often due to ill-fitting dentures and a lessened ability of the mouth to care for its own saliva. A wet debilitated skin that allows for yeast infection is thus present. This is too often diagnosed as vitamin deficiency by otherwise competent physicians. Diabetes often accompanies this condition. It must be looked for in each instance. The finest treatment, other than an attempt to correct mechanical factors, is the use of gentian violet, 1 or 2 per cent aqueous, for a period of treatment of seven or eight days.

Sometimes yeast infections of the lips can be secondary to other irritative lesions of the lips. Two recent cases were so diagnosed in our own practice, because, I suppose, of our recent renewed interest in this subject. One of these had been operated on previously for carcinoma of the lip and this new persistent lesion on the other side of his lip followed a prolonged exposure to sun. It, of course, worried him that he was developing a new carcinoma. It was a sharply defined wet, moist, scaly area. Scrapings from a wet base revealed great numbers of budding yeast cells. Treatment with gentian violet gave prompt relief. The other patient, a white woman in her late forties, had suffered with a cracked, wet, scaly condition of her lips for over a year. The condition followed severe sunburn and had been diagnosed as a contact dermatitis. Scraping here too revealed many budding yeast cells. Treatment with gentian violet and zephiran chloride, the discontinuance of grease, and the local use of milk of bismuth has given her prompt relief. She is not yet cured, however.

CUTANEOUS MONILIA

Cutaneous monilia found most often in intertriginous areas and in obese individuals may occur primarily or secondarily to other conditions affecting warm, moist areas. It is characteristically a red, weepy, and sharply circumscribed lesion and as ordinarily candida are not found on the normal skin, scrapings from the margins are diagnostically significant. Treatment is to avoid water and to use tincture of zephiran chloride, 1:1000, tinted or untinted, and at first dilute, followed by the dusting on of heat powders. Gentian violet does not, in our experience, give as good results and it tends to react on the skin after the prolonged use which is sometimes necessary.

Yeast infections on the glans penis are sometimes acquired from the female, and are often found in the noncircumcised. Here too, zephiran chloride and sometimes gentian violet are of value.

YEAST INFECTION OF HANDS

Most important from the standpoint of both morbidity and incidence are yeast infections of the hands. Here one finds the start of that most dread of all diseases to the housewife, namely "dishpan hands." Soap accumulates under rings and with its corrosive action destroys and removes all surface epithelium. The consequent

lowering of resistance allows for invasion by the yeast organism, resulting in erosio interdigitalis blastomycetica, and then the gradual metamorphosis of this condition into the typical picture of infectious eczematoid dermatitis of the hands. One of our patients, a young housewife, had such a condition develop under her wedding ring and simultaneously with its development a chronic chafed area of her groins suddenly erupted into a typical and extensive yeast infection. Both areas were diagnosed on scrapings when budding yeast cells were found in large numbers.

There is, in my opinion, no greater advance in the treatment of the infectious eczematoid dermatitis stage than the use of Domboro soaks, used as hot as possible and for at least thirty to forty-five minutes per day. Gentian violet in calmer stages is still an excellent remedy.

Yeast paronychia and eponychias are so often secondarily infected with bacteria that patients seek help because of severe, painful infections which must be treated as such before the yeast infection may be dealt with.

The green finger nails as described by Moore and Marcus[7] are sometimes due to *C. albicans*. In his cases the infected nails were light to dull green with the lesion beginning at the outer margin of the nail and extending into the nail plate. Here also, gentian violet preceded by extensive and constant trimming of nails is beneficial.

The prevention of hand yeast infection calls for reduction in exposure to soap and water, fruit and vegetable juices, and other chemicals and irritants. This is accomplished best by the use of thin cotton gloves worn under rubber gloves when this type of exposure is anticipated.

SUMMARY

Monilia infections are caused by a variety of factors, more than one of which may be present in any given case. The problem of infectious eczematoid dermatitis of the hands may at its inception have been due to yeast. Diabetes and other chronic conditions must be sought for as underlying causes, no matter what the circumstances may be that give rise to the invasion of the skin and mucous membrane by this organism. Patients should be instructed as to possible side effects when taking the newer wide spectrum antibiotics, so that they will discontinue them when symptoms arise.

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DISCUSSION

Dr. James J. LaNasa (Baton Rouge): We, in Baton Rouge, are all seeing an increase in the incidence of Monilia infections, and seem to be having more trouble in getting them under control than in previous years.

I agree with Dr. Kennedy et als that the antibiotics should be used over short periods of time and should not be used promiscuously.

As far as treatment is concerned, I cannot say which is best. In skin infections, I feel that gentian violet—although your patients may hate you—is better locally than other drugs; it should be used sparingly and in infrequent applications. For a time, I experienced better results with zephiran chloride, but not recently. The B complex vitamins, B_{12}, crude liver injections, are definitely of value and should be used. Superficial x-ray, of course, is useful, but certainly, not the entire answer because of dosage limitations, etc.

Recently, my partner, Dr. Marion E. Kopfler, has been using panthoderm cream, either plain, or the panthoderm R.S., with definite aid in the treatment of Monilia infections of the skin.

Dr. Leslie K. Mundt (New Orleans): I appreciate the opportunity of discussing Dr. Kennedy's fine paper. The subject has been covered extremely well, but I would nevertheless like to summarize and re-emphasize a few of the practical points that constantly confront the general practitioner and dermatologist. The common monilial infections of the skin include onychias and paronychias, erosio interdigitalis blastomycetica and intertriginous eruptions in various parts of the body. The clinical syndrome, perleche, frequently is caused

by a yeast infection and perpetuated by the constant bathing of the skin with saliva at the angles of the mouth in edentulous older people. Monilial infections are characterized by maceration and shininess, vesiculation, redness, bogginess, and secondary infection. Moniliasis in its various forms has always been with us, but as Dr. Kennedy pointed out, it is now more of a problem than ever before because of the widespread use of antibiotics. Most of us not infrequently see an acute stomatitis or vulvitis resulting from and following the administration of one of the newer antibiotics.

Onychias and paronychias, as well as the characteristic soggy dermatitis in the webs of the fingers (erosio interdigitalis blastomycetica), result from work requiring constant contact with water. As mentioned previously, perleche, too, is caused by constant moisture at the angles of the mouth.

A point that should be stressed is the very frequent association of diabetes and monilial infections. The relationship is common enough to warrant studies to rule out diabetes in all suspected cases of moniliasis, and this is especially true when the skin affection is pustular and secondarily infected. In the event diabetes does exist no amount of local treatment alone will eradicate the associated skin disease, but treatment of the diabetes will clear up the skin in a specific manner whether or not local treatment is used. So patients with monilial infections should be examined first and foremost for diabetes.

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ORTHOPEDIC CARE OF THE WAR WOUNDED*

WILLIAM LOUIS MEULEMAN, M. D.
LAFAYETTE

The Korean theater was in many respects unusual, to say the least. It provided a never ending work load, but one that was not overpowering. It presented vast numbers of troops of various nationalities with no common tongue, all of whom required treatment at American installations. It was also unusual insofar as the swiftness of evacuation to where definitive or intermediate treatment could be started, as well as the employment of procedures which were ordinarily thought of as being reserved for general hospitals in the United States; and finally, in the return to duty within a relatively short period of time of men with injuries who are usually thought of as being incapacitated for long periods of time.

The chain of evacuation employed in Korea was essentially that used during World War II. The casualty after reaching the battalion aid station was taken to a clearing station, usually by motor vehicle. The more seriously wounded were taken directly from the aid station by helicopter to a MASH installation. It was this one means of transportation that reduced the soldier's chance of dying by about 50 per cent. In other words, if he could reach an aid station alive, his chances from there on were quite good. If he were taken back to clearing because of circumstances and his condition warranted, he was then taken by helicopter to the Mobile Army Surgical Unit.

The MASH was, I am certain, responsible for more lives saved than any other single organization within the Army Medical Service. While originally the MASH was designed, as its name suggests, a mobile unit, the Korean conflict was more or less a static affair insofar as the necessity for moving these installations was concerned. In fact, to the best of my knowledge, during my stay in Japan the MASH's did not move, but in fact had set up in fixed installations. I personally had no argument with any MASH. By and large, the quality of work was excellent. It was, however, interesting to watch the change in attitude from civilian to battle casualty thinking that would slowly but surely evolve as a new group of replacement doctors would arrive. The first two or three dozen casualties that would arrive in Japan were, generally speaking, in poor condition. Debridements were on the timid side. The skin debridement was tremendous, the fascia less so, muscle hardly violated and it was questionable if the bone or other deep structures were even visualized. In order to correct such defects, there was devised, and for some strange reason it worked exceedingly well, a form summary which we in Japan were obliged to complete and return to the installation most concerned with the case at hand. This letter would tell of the condition on arrival and what was done as an

* Presented at the Seventy-fourth Annual Meeting of the Louisiana State Medical Society, New Orleans, May 22, 1954.

intermediate or definitive procedure, and most important, what we felt might have been done initially to have simplified or have made further handling easier. While admittedly the last part of the letter was strictly a hindsight proposition, I am sure that it offered some food for thought as it was usually not long after MASH received some of our letters that debridement became more thorough.

The stay within the MASH varied with the case; on the average, one to three days, or as long as ten to fifteen, with more critically wounded. The next stop before Japan was the evacuation hospital. This stop was primarily to await transportataion. Transportation was in all cases by air, except in the rare instance when a U. S. Navy Hospital ship might be in the vicinity and bound for Yokohama. The hospital in which I was stationed for the first twelve months of my tour was a treatment center for the UN casualties and this composed approximately 90 per cent of our patient load. The consternation can be well imagined. The average UN soldier knew no English beyond a few words of nonconversational English picked up from the GI. We, on the other hand, had no knowledge of Greek, Turkish, Thailand, or Ethiopian. The Dutch and French posed less of a problem. Occasionally, we would receive an English speaking Turk, Greek, or Ethiopian and we would usually try to retain him as long as possible. However, out of this confusion we evolved a common language of sorts and this was Japanese. I do not mean that any of us were linguists, but knowing about two dozen words of Japanese and combining these with a pidgin English, plus the occasional word of their native language, an understanding of sorts was achieved. One salvation was that an occasional UN soldier would speak another language, and not infrequently, two or three way conversations were carried on.

The UN soldier was, by and large, an extremely grateful patient, particularly the Turk, Ethiopian, and Thailand. Apparently medical standards in their own countries were somewhat different than ours and everyone taken to surgery with serious or multiple wounds of the extremity fully expected to awaken minus the extremity. The fact that our installation served as a UN hospital certainly made our work more interesting than that of the installation serving American troops. On the average, UN troops were evacuated to their homeland at six months intervals. The Army policy in the Far East was that as much definitive work as possile should be done before evacuation. This policy certainly took some of the sting out of the other policies set up by the Army. However, as all things must end, so did our UN medical status. Various military missions were stationed in Tokyo and protested so much about the 13 kilometer trip to Yokohama that eventually the Tokyo Army Hospital took over our function. As a U. S. Military Hospital, the only thing that changed was that we could understand the language and as there were adequate facilities for treatment within the United States, cases requiring extensive definitive care were evacuated.

The death rate on the battlefield was approximately 20 per cent, only slightly lower than that of World War II. The death rate among the wounded in the hands of the Army Medical Service was down to 2.5 per cent. In an attempt to reduce the battlefield death rate, a team made up of the Quartermaster, Ordinance and Chemical Corps of the Army and the medical service of the Navy, studied some 5,000 cases of killed and wounded over a four months period. The result of this study was, as you are well aware, body armor, first the vest and then the pants. After seeing the beneficial effects of such armor, there were more recent suggestions of extending this armor to include some form of protection for the arms and the legs, areas still extremely vulnerable. While no figures were available to me on the percentage of orthopedic casualties in proportion to the troops involved in combat, I would feel that the percentage was much higher than it was in World War II.

Certainly, the use of body armor made a good many cases orthopedic in nature which would otherwise have been dead because of accompanying chest or abdominal wounds.

The orthopedic management of the wounded had changed materially since World War II. Actually, certain of the changes came about in the normal process expected with certain improved techniques. While the number of people qualified to do orthopedic work was limited, the available men were so placed that the cases came to these hospitals. Finally, because of the predominance of orthopedic casualties, we were permitted to employ so-called radical treatments, not only to speed recovery, but to keep our available bed situation more fluid. For the World War II physician, I will agree that the Korean war was quite limited in scope and that means a good deal, and what I am going to say is in no way derogatory to any member of World War II Service; I am simply explaining what we did.

As previously mentioned, most of our cases were received within one to three days after injury. The debridements were usually adequate. The evacuées were received late in the afternoon and by that evening had been worked up and replacement therapy started. Chemotherapy was routinely started on admission to the wards. All initial dressings were done with doctors, nurses, and corpsmen using caps, masks, and sterile gloves. By the time the patient had been in the hospital approximately twelve hours, he had been examined, dressed, was in traction, and supportive treatment well under way. Generally speaking, within forty-eight hours after arrival the casualty was on a surgery schedule. Approximately 75 per cent of the cases could be given skin coverage without anything but the lightest debridement. Most of the skin coverage was done with split thickness grafts. Yet, if the case called for a pedicle, that was done. As a matter of fact, most of the pedicles were so-called emergencies. As soon as we saw the elbow joint, for instance, completely exposed without the remotest possibility of securing soft tissue coverage from the immediate area, that case was taken to surgery as soon as his condition would warrant. Maybe we were lucky, but we never had occasion to regret this course.

Once soft tissue coverage was secured, the fractures were treated as simple fractures and if open reduction was indicated, that was done. We selected the cases quite carefully and if there was any sign of soft tissue reaction, the treatment was conservative. If an open reduction was elected, we tried to utilize some form of intramedullary fixation. I am certain you are familiar with the femur wards during World War II. We still had the femur wards, but the only cases you would see in traction would be those which had not had internal fixation applied. Most of the cases would come to surgery about three to five weeks after their arrival and bone grafts were done at the same time. By this means, we were returning to duty in the Korean theater, compound fractures of the femur and all within the space of four and one-half to five months. Occasionally a compound fracture, internally fixed, would develop an abscess requiring drainage and might show a persistent drainage for some time. Rather than remove the fixation and go back to conservative traction and treatment, the nail was left in place, the muscles strengthened, the joints mobilized, and the infection treated. In most instances, by persevering, union was eventually achieved and the drainage would cease with the appropriate treatment. The simple fracture was treated definitively shortly after admission and without exception, the man was returned to limited duty in Japan within three months, and usually within six months could be reassigned to the back area in Korea. Simple tibial or ulnar shaft fractures had initial iliac grafts applied with the internal fixation.

We were also permitted, in the Korean theater, to carry out relatively simple and uncomplicated tendon work. In cases of nonunion, where by means of appropriate bone grafts union might be expected with-

in a reasonably short period of time, we carried out such procedures. One of the things that impressed me most was the change in attitude in the cases of severely compounded and comminuted fractures where infection supervened. In the past, emphasis was on conservation of bone. All pieces of reasonable size were cleaned, replaced in the wound with the feeling that such pieces could always be utilized. I do not wish to give the impression that bone was needlessly sacrificed, but in the indicated case, block resections were not too infrequent, but were done when it was apparent that the infection could not be controlled by the usual means, and by permitting it to more or less run its course, would leave an extremity so bound with scar that almost invariably neurovascular changes would result. It was nothing short of miraculous the change that would occur after the block resection and appropriate treatment directed to clean the bed, after which skin coverage was effected. Maintenance of length was no great problem, if the fibula was intact or if it was missing, the bone ends were kept apart by placing a Smith-Peterson nail of appropriate length between the major fragments. In line with the treatment of the compound fractures, it was found that the judicious use of either single or multiple screws to give some degree of stability was definitely advantageous. While such practice was not routine, in the indicated case if it was felt that stability would give much toward soft tissue healing and accordingly, skin coverage, screw fixation was used to immobilize the fragments.

One of the apparent major departures from the routine was in the case of the amputee. In almost all cases, the amputees were retained within our installation until a definitive stump could be made. The only exception was in the case of the partial amputation of the foot, which was treated by split thickness grafts and then evacuated to the United States for either fitting of a prosthesis suitable for the portion of the foot remaining, or for consideration for a Syme's amputation.

These are just a few of the examples of departure from the standard Army procedures. While certain of the procedures might be open to criticism, I personally feel that on the basis of what I have seen, that by and large they contributed much to an earlier rehabilitation of the wounded soldier.

BODY SECTION RADIOGRAPHY *

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In the past fifteen years body section radiography has become a routine procedure in almost all hospital x-ray departments and almost all private radiographic laboratories in the large cities of the East and West. A great deal of time cannot be devoted here to the history of body section radiography, but it may be mentioned briefly that DesPlantes of Utrecht, and also, Bocage of France, both claim to have invented the method in 1921. Since that time many names and many mechanical appliances have been invented to produce a similar result, (i.e. body section radiography). The most common names in present use for this type of examination are laminagraphy, planigraphy and stratigraphy. The original equipment was hand driven and dangerous to the technician since there was no protection for him. Present apparatus is mechanically and automatically operated by remote control from a control booth.

Body section radiography may be defined as a method of x-ray examination which involves moving the tube in one directon while the film moves in the opposite direction at a proportional rate. The film and the tube rotate about an axis in the plane which it is desired to radiograph. The effect of this is that there is one "layer" or "plane" which is constant in relation to the tube and the film because the movement is in constant ratio and the shadow of every particle in

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that layer will continue to fall on the same point on the film. As the film moves the distance corresponding to the movement of the shadows of the points in that plane points above and below that plane will fall on different parts of the film and consequently become blurred. This can be illustrated by Figure 1. Note that

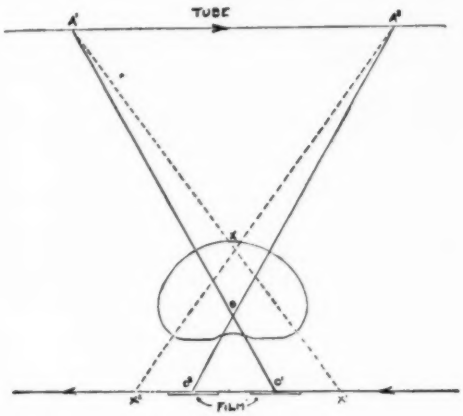

Figure 1

the unbroken line represents only the central ray from the tube that is going through Point O. Also note that the central ray starts and ends in the same position on the film. Any other plane is blurred because the central ray from the other planes will fall on different parts of the film. Point X illustrates a plane off of the focal plane. Figure 2 is a photograph of the equipment we use to take body section radiographs.

The object of body section radiography is to clarify the detail of certain structures of the body which are difficult to demonstrate due to overlying and underlying structures (such structures as sternum and temporomandibular joints). It is also useful in separating layers of pathology and determining depth of lesions.

Body section radiographs will not replace conventional radiographs. They, however, in many cases give added information and in some cases information unobtainable by conventional radiographs. Due to the length of time that it takes to produce body section radiographs it is necessary that the patient is in sufficiently

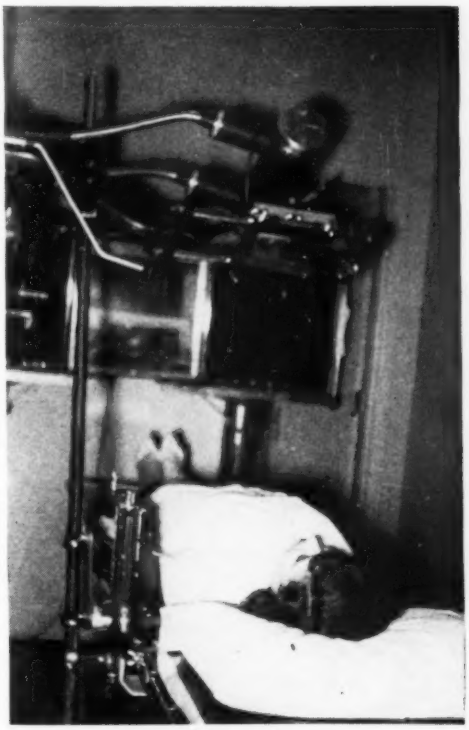

Figure 2

good condition to co-operate fully. I have selected a few cases in which I think body section radiography has added considerable information over and above routine radiographs:

The first case I wish to illustrate is of a male, age 54, whose complaint was hoarseness. He had been examined by an otolaryngologist who noted some thickening of the right vocal cord and referred him to us for stratigraphs. Figure 3 illustrates a stratigraphic cut taken 7 cm. from the posterior wall of the neck in the region of the larynx. Note that this cut is taken through the middle of the trachea and through the midportion of the larynx. There is a small polypoid lesion which extends into the air filled portion of the larynx. Also note that the cervical vertebrae and other dense structures of the neck are not seen in this film. This lesion was removed surgically and the patient is now living and well.

The second case I wish to demonstrate is that of a male, age 24, who was in an

Figure 3

automobile accident in which he was thrown forcibly against the steering wheel. Routine x-rays at a local hospital failed to reveal any evidence of fracture. However, the patient continued to have pain over the sternum and the patient's physician felt that he had a fracture of the sternum. He was sent to us for stratigraphs and Figure 4 illustrates a lateral

Figure 4

stratigraph of the sternum taken 7 cm. from the right chest wall. A fracture through the upper third of the sternum can clearly be seen in this film. Note that only the sternum is visible in this plane.

Figure 5 shows a body section radio-

Figure 5

graph of a normal temporomandibular joint and also illustrates other structures in the same plane, such as the ramus of the mandible and mastoid. Note that the overlying bone of the skull and the opposite jaw, as well as the cervical vertebrae, are not visible on this film. These latter structures frequently blur this plane in normal radiographs.

Figure 6 (stratigraph cut at 8 cm. from

Figure 6

posterior wall of the mediastinal portion of the chest) illustrates a patient with untreated Hodgkin's disease and with early bilateral hilar involvement. Note the "grape-like" hilar lymph glands enlarge-

ment and their relationship to the right and left bronchi.

Figure 7 (stratigraph cut 13 cm. from

Figure 7

posterior wall of the chest in the region of the left apex) shows 3 small cavities which were obscured in conventional films by the first rib. This patient has com-

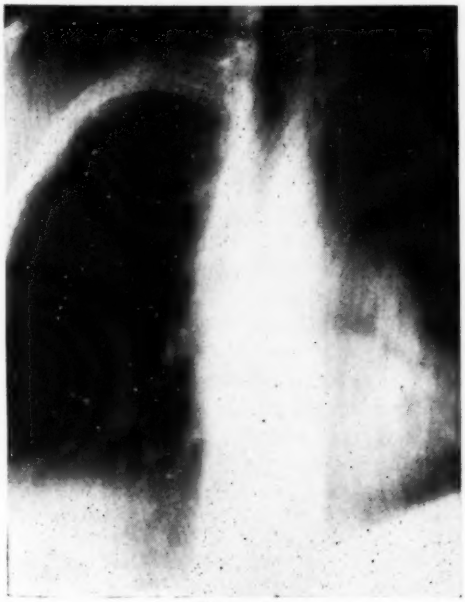

Figure 8

plained of intermittent hematemesis over the past eight months.

Figure 8 (stratigraph cut 13 cm. from posterior wall of the chest in the region of the left hilum) reveals the left bronchus to be occluded by bronchogenic carcinoma. Patient went to surgery and a bronchogenic carcinoma was successfully removed.

Figure 9 (stratigraph cut 4 cm. from

Figure 9

the posterior wall of the pelvis at the lumbo-sacral joint) shows destruction of the left half of the medullary portion of the first sacral segment and a portion of the left wing of the ilium. Ordinary radiographs of this region failed to reveal any visible pathology because the cortex of these bones were not involved.

Figure 10 (stratigraph of the left apex cut 8½ cm. from the posterior wall of the chest): Note thick-walled cavity and bronchiectatic changes. This was a film of a male, age 41, who was a very active business man and who had an ordinary chest film taken as part of an annual physical examination and fibrotic and possible areas of cavitation were reported by a radiologist. This man was of the type who wanted confirmation of these findings and went to three other radiological

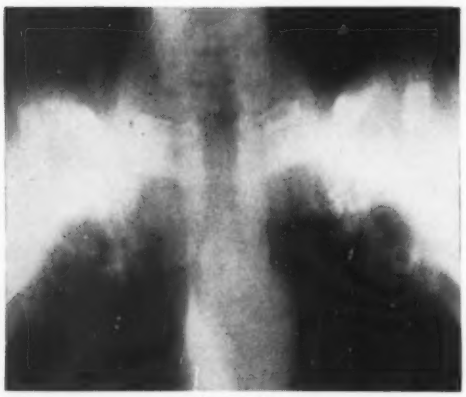

Figure 10

laboratories and received various impressions. The reason for the various impressions was that in some chest films the cavity was hidden by the first rib and the only pathology seen appeared to be fibrotic. Stratigraphs proved this cavity to be 2.5 cm. in depth. On the basis of the stratigraphs this man retired from work for one year and is now back at work for the past five years and apparently well.

To sum up the values of body section radiography, I wish to emphasize that in all of my enthusiasm for this form of x-ray examination I do not want to leave you with the impression that stratigraphs will replace ordinary x-rays. They will, however, be used to verify and clarify information found in ordinary radiographs.

Note: Definition of body section radiography adapted from *Manual of Tomography* by Maurice Weinbren, 1948, Charles C Thomas, Publisher, Springfield, Illinois.

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THE NONSURGICAL MORTALITY OF ACUTE APPENDICITIS*†

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Between April 1, 1930, and December 31, 1953, 535 persons died of acute appendicitis in Charity Hospital of Louisiana at New Orleans. Of that number 183, slightly more than a third, died without benefit of surgery. Of the 183, 53, or 29 per cent, were admitted moribund.

The surgical case fatality rate in acute appendicitis has steadily decreased for many years. In the last series of surgical cases which I studied in detail and which occurred during the four-year period ending in 1949, the case fatality rate had fallen to 1.7 per cent. According to the hospital records, which I have not analyzed in detail, it was even lower approximately 1 per cent, for the four-year period ending in 1953. But during this eight-year period, when there were only 32 surgical deaths in 2,442 surgical cases, there were 25 nonsurgical deaths. Ten of these 25 patients died within twenty-four hours of admission, in one instance within thirty-five minutes, and in another within two hours. In the light of these facts, as Rees[1] has recently expressed it, acute appendicitis is still in greater need of attention than "other and more publicised methods of dying."

The nonsurgical mortality of acute appendicitis may be approached from several points of view: (1) expectant treatment, which is an argument of long standing; (2) antibiotic therapy, which has become a risk—the nomenclature is deliberate—only during the last several years; (3) diagnostic error, which has existed as long as the disease has been recognized but the magnitude of which is still not appreciated; (4) the responsibility for these deaths, which is often compound.

ANTIBIOTIC THERAPY

Since patients with acute appendicitis now stand in real therapeutic danger from the misuse of the antibiotics, let me begin my discussion from that point of view. The following histories, both of which concern nonfatal cases, will show, I think, that the implications of the statement which I have just made are correct:

Case No. 1. A 7 year old negro girl came to the hospital, on the advice of her local physician, twenty-four hours after she had begun to suffer from paraumbilical pain, nausea, vomiting, diarrhea and chills. She had been given a purgative. She was refused admission but was given a pre-

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scription, apparently for a sulfa drug, to take five times daily. Four days later the patient was brought back to the hospital. Pain and tenderness were now localized in the right lower quadrant. Further examination, after a dose of amytal had taken effect, revealed a mass in the same area. A diagnosis of appendiceal abscess was made and an excellent peritonitis regimen was instituted, supplemented by all the antibiotics then available (penicillin, streptomycin and aureomycin) plus a sulfa drug. The child came very close to death, but at the end of sixty-three days she was sufficiently recovered to undergo appendectomy. She was discharged in good condition five days later.

Case No. 2. A 12 year old negro girl was admitted to the hospital ten days after the onset of vomiting apparently precipitated by the ingestion of raw bacon. Soon afterwards paraumbilical pain ensued. Later it localized in the right lower quadrant. A physician who was consulted on the third day of the illness prescribed a sulfa drug. The girl's condition became progressively worse and a second physician, who saw her on the tenth day of illness, made a diagnosis of rupture of the appendix and sent her to Charity Hospital. Her temperature at this time was 103.4° F. and her pulse 124. Examination revealed abdominal distention, tenderness in both lower quadrants, and rigidity in the right lower quadrant, where a mass was palpable.

Surgery was limited to incision and drainage, no search being made for the appendix. An excellent peritonitis regimen was instituted, supplemented by penicillin. This drug was replaced by streptomycin after angioneurotic edema appeared and the patient went into a state resembling shock. On the eighteenth day of hospitalization an abscess of the abdominal wall was drained. Later, a secondary drainage operation was necessary because of prevesical and intraabdominal extension of this abscess. Still later, on two occasions, the subphrenic space was drained. Repeated transfusions were required and bacitracin was added to the regimen. Altogether, this child spent sixty-five days in the hospital, and, like the first patient, she came very close to death.

These cases need no extended discussion. It seems perfectly fair to say that the first patient would have been spared a long illness that was almost mortal if (1) she had been admitted to the hospital when her physician sent her there or (2) incision and drainage had been performed when she returned four days later. The hospital also would have been saved many stay days, a great deal of medical and nursing effort, and the expense of the antibiotics, some of them then very costly, which were used over an extended period of time. Combined antibiotic therapy has its place, but, as Pulaski[2] has stressed, the evidence for it is still conflicting and the use of all the drugs which happen to be available is completely without reason and may be dangerous.

The second patient was in fairly good condition when she was finally discharged, but her appendix was still in situ, in spite of the series of operations which she had undergone, and at the end of four years she has not yet returned to have it removed. Her treatment in the hospital, by incision and drainage, was perfectly sound, in view of her condition on admission, but she had been put in that grave condition because she was given a sulfa drug instead of surgical therapy when she was seen by a physician on the third day of her illness. She is still in jeopardy of her life, for she still retains a potentially lethal organ.

Otologists have begun to use rather strong language about the type of conductive deafness in childhood which is now one of their major problems and which is produced by the treatment of otitis media by antibiotics instead of on established surgical principles, that is, by myringotomy and evacuation of the exudate. Surgeons are rapidly encountering a similar problem, as these two case histories show. They are being called upon to treat the therapeutic complications of acute appendicitis in mortally ill patients, the opportunity having passed to perform simple appendectomy on good-risk patients. It is, of course, one of the paradoxes of this curious situation that many of these patients, like the two just described, owe their survival, at least in part, to the very antibiotics which have brought them to their present state.

In 1950, a professor of medicine at one of the leading medical schools of the country, a man who certainly should know better, made the major error of including acute appendicitis in a book dealing with the medical management of gastrointestinal disorders. He compounded the error by stating that with "increasing knowledge of the efficacy of the sulfonamides

and antibiotics, the question arises whether all patients with acute appendicitis require immediate surgical intervention." Curiously, the author then goes on to say that the development of an abscess in the right lower quadrant of the abdomen is an indication for surgery. I heartily agree with him, but some of my betters would say that he was on debatable ground.

The error in this 1950 text has been duplicated many times over in the periodical literature. On the other hand, numerous articles have been published to show the dangerous and sometimes fatal results which may occur when the antibiotics are substituted for surgery in acute appendicitis and other surgical conditions.

A sort of reverse error has also crept into the medical literature, in which much of the attention is now devoted to the complications of acute appendicitis and the miracles which can be brought about in them by the new drugs. Very little attention is paid to the desirability of controlling the uncomplicated disease by surgery, with no antibiotics at all. Journals devoted to internal medicine seldom publish anything at all on acute appendicitis. The *Journal of the American Medical Association*, which has the largest professional circulation in the world, has paid editorial tribute to the use of the antibiotics in appendicular peritonitis and has published articles on the complications of acute appendicitis. It has not published an article on acute appendicitis as such in more than 10 years and my own attempt to rectify the situation was turned down with unflattering promptness.

One of the very considerable dangers in this connection is that lay persons are beginning to believe that antibiotics are a substitute for appendectomy. More than once, in the last year or two, I have had to speak very bluntly to patients, or to the parents of young children, who clung to this idea. The public can scarcely be blamed. Three times within less than a year a syndicated medical columnist has indicated that appendicitis is no longer a dangerous disease and that antibiotic therapy is an alternative to surgery. When an article in the newspaper is entitled "Appendicitis. Surgery or Antibiotics?" the fact that a few laudatory things are said about operation in the course of it does not undo the harm done by such a heading or by the concepts it suggests.

I should be less than just if I did not say that another syndicated medical columnist, Dr. Edwin P. Jordan, having read some remarks I had made in this matter, sent me a column of his own in which acute appendicitis is discussed with clarity and soundness. Its tricky nature is emphasized, as are the dangers of delayed diagnosis, the importance of consulting a physician promptly for abdominal pain, the necessity for prompt operation, and the dangers of cathartics. In the whole article there is not a word about the antibiotic therapy of acute appendicitis, as there should not be.

Antibiotics are not a substitute for surgery in this disease. Their use for that purpose accounted in large part for at least 10 of the 183 nonsurgical deaths at the New Orleans Charity Hospital, all of these fatalities, of course, occurring within the last decade. Outside physicians were practically always responsible for the incorrect management. Numerous other cases, like the two whose histories I have related, testify to the unwisdom of this new method. When antibiotic therapy is employed as a substitute for surgery, the patient is subjected to a gamble which does not always pay off. When it does, he would probably have recovered just as promptly if it had been omitted.

DIAGNOSTIC ERROR

In 92 of the 183 nonsurgical deaths which form the background of this paper the diagnosis was confirmed by postmortem. In a number of instances autopsy first revealed the nature of the condition present. In the remaining 91 cases the diagnosis was made clinically. If there are any deaths in this series which were not due to acute appendicitis, I am certain that they will be more than com-

pensated for by the cases of acute appendicitis signed out under some other diagnosis because, as in many of the confirmed cases, the manifestations were entirely atypical.

I have long believed that failure to appreciate the atypical character of many cases of acute appendicitis is responsible for a major portion of its continuing mortality.[3] This is particularly true of patients in the upper age group.[4] Many of the histories in this series are incomplete, because of the serious state of so many of the patients on admission, but the proof of my contention is nonetheless perfectly clear.

The initial symptoms often did not follow the classical pattern (Figure 1) and

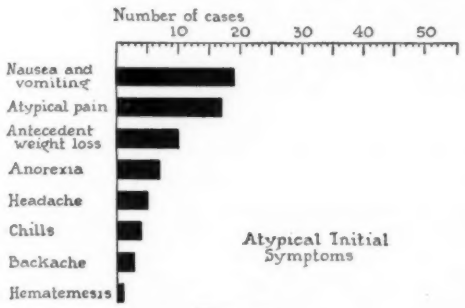

Figure 1

were sometimes extremely misleading. One would not, for instance, think of an acute inflammatory disease when, as happened in 10 cases in this series, the illness was preceded by a loss of weight which was sometimes considerable. Not surprisingly, malignant disease was suspected in a number of these cases, and one patient died in the course of preparation for operation on a presumed carcinoma of the cecum.

In a number of cases the illness began according to the classical pattern, with abdominal pain, but the course thereafter was entirely atypical (Figure 2). Pain, for instance, was on the left side in 5 cases, on both sides in 3 cases, and in the right shoulder in 1 case. In 2 instances, both in older persons, it was vague throughout the illness. In 14 cases, cessation of pain, which proved only temporary,

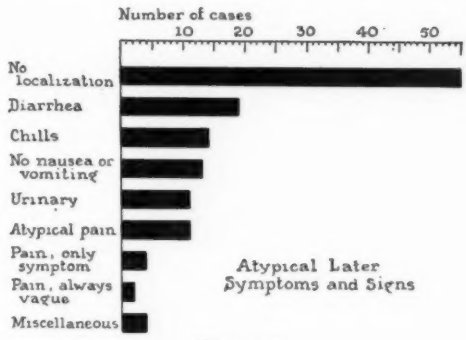

Figure 2

misled the patient, the outside physician, the physicians in the hospital, or all of them. An unusually large proportion of patients had urinary symptoms, diarrhea or chills. The absence of localization and the absence of nausea and vomiting increased the diagnostic confusion in a great many cases.

Distention is a frequent and not generally appreciated finding in acute appendicitis in older patients. That was true in this series, though in many of the 65 instances in which it was present in this series it was an index of the late stage of the disease. A similar explanation holds for the large number of cases in which dehydration, toxemia, fluid levels, a silent abdomen, jaundice, delirium and coma were present. As in all acute appendicitis, the temperature and pulse ranged widely, as did the white blood cell count and the percentage of polymorphonuclear leukocytes.

In a number of cases (Table 1) the appendiceal disease had its onset in the course of some other disease or condition. In one case, apparently of traumatic origin, the symptoms ensued shortly after an automobile accident. In another case symptoms began shortly after the bite of a black widow spider. The history could not have been more typical. The patient was treated for arachnoidism and the autopsy was scheduled as a demonstration of the condition and was widely attended. It revealed a ruptured appendix with ascending pylephlebitis. It was one of the most surprising autopsies I have ever

TABLE 1
ASSOCIATED DISEASES AND CONDITIONS

NUMBER OF CASES	ASSOCIATED DISEASE OR CONDITION
15	Obesity
11	Cardiac disease
10	Ascariasis
8	Renal disease
6	Hypertension
5	Diabetes
4	Typhoid
4	Measles
3	Pelvic inflammatory disease
1 each	Tuberculosis, serous cystadenoma of ovary, brain tumor, lymphogranuloma inguinale, carcinoma of lung, puerperium, fracture of femur, urethritis, cholecystitis, pneumonia, black widow spider bite, automobile accident

witnessed, and the most astute physician could scarcely have made the diagnosis antemortem.

A number of these patients had chronic diseases, upon which all the attention was centered. In 2 cases the diagnostic error made small difference, since 1 patient was mortally ill with carcinoma of the lung, and the other with serous cystadenoma of the ovary. Some of the others might have been saved if it had been remembered that because of its extreme frequency acute appendicitis very often occurs in patients ill with other conditions.

Incidentally, obesity is not, of course, a disease, nor is it related in any way to acute appendicitis. It does, however, increase the difficulty of diagnosis, for obvious reasons, and it increases the death rate. In the surgical series the mortality in obese patients was almost 19 per cent.

Nine of these cases illustrate a special and peculiar danger not limited to acute appendicitis. It is, as a number of observers have pointed out, that the most unsafe possible place in which to develop an acute abdominal condition is in the hospital, while under treatment for another condition. One of these 9 patients had been hospitalized for years for tuberculosis and another for months for decompensated cardiac disease. In neither instance was acute appendicitis suspected until it was revealed at autopsy. One patient was being prepared for surgery for a brain tumor. Another had a fractured femur. The others had, respectively, biliary tract disease, lymphogranuloma inguinale, diabetes, and pneumonia. If acute appendicitis was diagnosed at all, the recognition came too late to save the patient.

In 17 cases the onset of symptoms occurred immediately after food had been taken, often to excess and unwisely. Certainly no blame can be attached to physicians who treat children for supposed dietary disturbances after they have gorged themselves on apricots, as one of these children did, or have chewed up camphor balls and swallowed them, as another young child did. The clinical picture was equally misleading in a number of adults who had consumed rich, mixed foods, sometimes at midnight, or who became ill immediately after drinking sprees.

The diagnoses advanced in these cases (Table 2) illustrate perfectly how perplexing acute appendicitis can be. The list gives rise to a number of interesting considerations: (1) the range of the diagnoses; (2) how reasonable many of the diagnoses seem in the light of the history, physical findings, and clinical course; (3) the fact that the chief diagnostic confusion was, as always, in the older patients, for whom,

TABLE 2
DIAGNOSTIC ERROR IN 183 FATAL CASES OF ACUTE APPENDICITIS

NUMBER OF CASES	DIAGNOSIS
15	Intestinal obstruction
14	Renal, various
11	Peptic ulcer (9 ruptured)
10	Pneumonia
9	Peritonitis of ? origin
9	Carcinoma (intestine 7, stomach 2)
7	Biliary tract disease
7	Cardiac, various
3 each	Mesenteric thrombosis, pancreatitis
2 each	Typhoid, neurologic, non-acute appendicitis, gynecologic, pyrexia of ? origin
1 each	Gastroenteritis, bacillary dysentery, arachnoidism, anemia, toxemia, ruptured viscus

as Wolff and Hindman[5] have said, it might be well to set up new diagnostic criteria for the disease; (4) how often in this series acute appendicitis, although the most frequent of all abdominal diseases, was not only not listed as the chief diagnosis but was not listed at all.

CONSERVATIVE (EXPECTANT) TREATMENT

Conservative (expectant) therapy was carried out in 70 cases in this series. Two patients refused surgery. Eleven others were in such serious condition on admission that they were entirely unfit for surgery. In the other 57 cases the choice was deliberate. These 70 cases are exclusive of the 53 cases in which the patients were admitted moribund and died within twenty-four hours.

The arguments against expectant treatment in acute appendicitis may be summed up about as follows:

1. The diagnosis of acute appendicitis is notoriously inaccurate. A palpable mass may be an appendiceal abscess, but it may also be an unruptured appendix surrounded by omentum. Furthermore, an appendiceal abscess may exist without an evident mass. When the appendix is retrocecal or pelvic, the abscess may not be palpable at all. It was not in 2 of the 21 fatal abscesses in this series.

2. It is frequently impossible to determine whether a peritoneal infection is localizing or spreading. This is particularly true since antibiotic therapy has been employed. As has already been pointed out, this form of management may control the clinical manifestations of the disease while at the same time it masks a continuing pathologic process.

3. Rupture of an appendiceal abscess under conservative management is entirely possible and may be fatal. Six of these 183 deaths occurred for this reason. In one instance rupture occurred twenty-four hours after the patient had been admitted, and a large mass previously present disappeared with dramatic suddenness. In two other instances the patients, both children, merely turned over in bed before the accident occurred.

4. It is unsafe to let an infectious process continue unchecked. In one of these cases, in which death occurred on the thirty-second day of hospitalization, autopsy showed pus still dripping into the abdomen from the ruptured appendix.

5. Results achieved by conservative therapy are no better than those achieved by prompt surgery supplemented, in complicated cases, by proper adjunctive therapy. In many respects they are not as good because the cases in which this method is used are frequently less serious, as I shall point out shortly, than the cases in which surgery is employed. As a matter of fact, the more competent the surgeon who chooses to use this method, the more selective is the series. I might also say at this point that in all of the later cases in this series of fatalities in which conservative therapy was employed, the regimen was excellent. One may question the wisdom of the choice of therapy but almost never the efficiency with which it was carried out.

So much for the arguments against conservative therapy. One other argument presents itself against it in this special series. Acute appendicitis cannot be treated according to a time table, but even the most ardent advocates of conservative therapy do not ordinarily advise it in early cases. When patients are seen within twelve hours and twenty-four hours and forty-eight hours of the onset of their illness, it is hard to conceive of circumstances which would contraindicate surgery and justify conservative therapy. In most of these early cases antibiotic therapy was part of the regimen, and enough has already been said about the unwisdom of that course of action.

Let me approach conservative therapy in another way. Between 1945 and 1949, when 1,172 patients with acute appendicitis were treated surgically at the New Orleans Charity Hospital,[6] with 20 deaths, 60 were treated conservatively, with 7 fatalities. Two of the 53 survivors refused surgery and 1 of them was critically ill when he left the hospital, against advice. Another patient was a hemophiliac and conservative therapy was, of course,

soundly based in this case. Certain disturbing considerations, however, emerge from an analysis of the other 50 cases:

In 6 cases the duration of illness when conservative therapy was selected was less than forty-eight hours. However one may feel about this method, this is a completely illogical application of it.

In 15 cases the period of hospitalization was less than ten days. One of these patients was discharged on the fifth day. I find it hard to believe that patients whose period of hospitalization was so brief were ever very ill.

Four patients underwent appendectomy before they left the hospital and recovered uneventfully. Whatever their future may hold, it does not include another attack of acute appendicitis.

Twenty-six of the remaining 46 patients did as they were told and returned for operation, though 5 of them did not follow instructions until they were jarred into action by another attack of acute appendicitis. Another patient had a recurrence on the ward, while awaiting operation. All recoveries were uneventful.

The other 20 patients have not yet returned for appendectomy. Among them is the patient whose case history was related earlier and who survived a series of operations for the complications of acute appendicitis while still retaining her appendix in situ. Sixteen of these 20 patients were between 40 and 77 years of age, a period of life in which acute appendicitis is peculiarly dangerous and in which expectant treatment is attended with peculiar risks. Eight of the 16 live out of the city and out of immediate reach of hospital facilities. All 20 of these recalcitrant patients represent one of the greatest disadvantages of expectant therapy in acute appendicitis.

Twelve other patients observed in the 1946-1949 period were treated by incision and drainage, which, under the circumstances, was entirely proper and probably lifesaving. When they were discharged, one was told that he need return only if his side troubled him and another that he need not return at all since the mass in his side had disappeared. Such advice seems singularly light-hearted in view of what happened to 3 of the 9 patients who followed instructions and returned for surgery, though not always promptly. All 3 had recurrent attacks. One was operated on while the inflammation was still confined to the appendix. The second patient had a second rupture. The third delayed three days after the onset of the recurrent attack, took a purgative, and returned with a ruptured and gangrenous appendix. In our surgical series of cases are the records of 33 other patients, also treated by incision and drainage and also advised to return for appendectomy. All of them eventually returned, but 5 of them lost their lives in recurrent attacks because they did not accept interval appendectomy.

For that matter, 19 of the 183 patients in this series of fatalities had had previous attacks which they had survived without surgery. In the 7,613 surgical cases studied in detail from the New Orleans Charity Hospital there were 44 deaths in patients who had survived previous attacks. Such fatalities always seem particularly unnecessary and distressing. The patient who has survived an acute attack of appendicitis without surgery should be warned of the possibility of recurrence and should be advised not to take camping, hunting, or fishing trips or to visit remote places where a physician would not be readily available. I doubt that prophylactic appendectomy ever will, or should, become the general practice, but physicians who are interested in acute appendicitis must feel a certain sympathy for General Eisenhower's conduct. You will remember that he took advantage of a quiet interval in his busy life to have his symptomless appendix removed. The columnists and commentators who are always in a state of gloom about the state of his health have at least one illness which they need not fear for him.

ASSIGNMENT OF RESPONSIBILITY

The assignment of responsibility for these 183 nonsurgical fatalities in most

instances can be only approximate (Figure 3). The hospital, naturally, cannot be

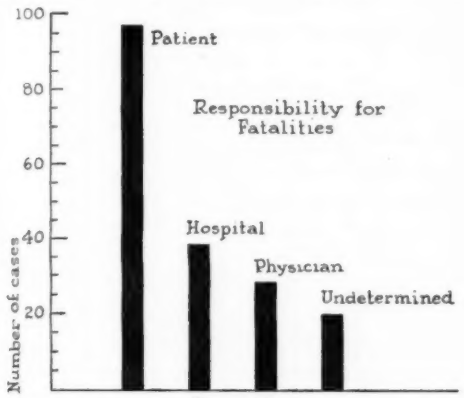

Figure 3

charged with the responsibility for the 53 patients who were moribund on admission, but in 38 other cases diagnostic efforts might have been more vigorous and the management perhaps wiser. In at least 28 cases—the number would undoubtedly have been greater if the records had been more complete—the fatalities must be charged to physicians who ordered purgatives for abdominal pain or who gave antibiotics and did not advise hospitalization for a disease that is essentially surgical. In 20 cases it was impossible to determine where the fault lay. In the remaining 97 cases the patients themselves were chiefly to blame for their fate. Seventy-eight of them took purgatives, 47 of them repeated them, and all of them delayed seeking medical aid until it was too late to save their lives.

In one sense the profession has no responsibility for these 97 deaths or for the 53 deaths in the patients who were admitted moribund. In another sense it cannot escape the onus for them. There is something the matter with our health education when patients are still taking purgatives for abdominal pain and are failing to seek prompt medical aid for it. Some of these cases go back more than twenty years, it is true, but 7 of the 25 patients observed in the 1946-1953 period took purgatives and 3 of them repeated them. In 12 of the 183 cases the purgatives were ordered by physicians, but this happened only once in the last years of this study. This was the time, however, when antibiotic therapy was sometimes used so unwisely and when some of the patients who entered the hospital moribund or who died later lost their lives through misuse of the very drugs that have saved so many lives.

THE SOLUTION OF THE PROBLEM

Every one of these 183 patients ultimately died of advanced acute appendicitis, even the 9 who died, variously, of cardiac disease, uremia, and pneumonia. Almost all of them could have been saved if they had sought medical care early enough or if they had been promptly hospitalized when they were first seen by physicians. Surgery is still the accepted treatment in acute appendicitis. Expectant therapy, if it is used, is a compromise. Efficient antibiotic therapy is an adjunct measure, not a primary treatment. Every case in this series well illustrates the everlasting wisdom of John B. Murphy's dictum, that when the patient is first seen, then is the acceptable day of salvation and then is also the time for removing the appendix.

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ONLY PHYSICIANS SHOULD PRACTICE MEDICINE

The statement that only physicians should practice medicine may seem axiomatic. However, in view of the present trends, the basis for this established principle should be restated, and its application to the problems facing organized medicine should be clearly understood.

Governmental regulations which have a bearing on the fact that proper qualifications should be held by those who strive to help the sick go back into the night of time. In the code of Hammurabi, thousands of years ago, statements are made as to the proper qualifications of a physician. The social wisdom of such laws shows in the jurisprudence of many nations, and in our own it shows in the elaborate arrangements for adequate medical education existing about us and in the praiseworthy operation of the system of licensing boards in our several states. Similar boards are in many nations. In the past century, the base of the pyramid that we know as medicine has become vastly broadened in the field of knowledge and of technical skills. All sciences have facets which support the stones of medicine. As those who have such knowledge or skills become proficient in their respective field, they desire to function independently of the supervision and direction of physicians. It is at this point that the question of acceptance or permission develops, and it is here that the decisions of the physicians as individuals and as a group must be made.

One phase of the problem is the controversy of the hospital practice of medicine. Another aspect is one which tends to go relatively unnoticed, and is that which pertains to the individuals with specialized training but without medical degrees or license to practice medicine. Many of these wish to care for patients who may be referred by physicians or other patients but their legal and moral responsibility is not covered by a physician's supervision. In this group may be, as individuals or groups, physiotherapists, psychologists, medical technicians, electrical technicians. In many instances, they seek to build individual practices and to secure a governmental license to operate as such. The State license so secured may serve as a cloak of approval or proficiency and acceptance so far as the public is concerned. Those who advocate such a plan point to the value of adequate regulation. This, however, does not offset the disadvantages which may accrue, no matter how restrictive and rigid the initial regulations may be. The tendency would be, in a few decades, to expand the scope of practice

and later the legal limits of practice in each of these fields. The next step is that many individuals would be practicing medicine whose outlook, training, and responsibility are technical only. This is the equivalent to having standards of education for the practice of medicine lowered to the degree that the technical licensing boards may choose. It is obvious at this point that this is just the opposite goal to that toward which organized medicine has been striving for generations.

The principles of medical ethics of the American Medical Association state that the physician is expected to exalt the standards of his profession and to extend its sphere of usefulness. He is expected to uphold the dignity and honor of his vocation. He should aid and safeguard the profession against admission to it of those who are deficient in moral character or education. The principles of ethics of the American Medical Association embody the most constructive, high minded, and ethical thought available to guide the American physician today. The practical application of these principles to the problems stated above is that the efforts of organized medicine should be supported in opposing legislation leading to the licensing of these practitioners on the fringe of medicine. The physician should go further than this. In the conduct of his own practice he should himself avoid referring patients to individuals in these respective fields who are not functioning under the immediate supervision of a physician. In referring patients for out-patient attention in hospitals, they should be referred to the physician head of the department, and not to the hospital as such.

By the observance of such principles and precautions they may avoid the building up of a wave of demand for limited licensure and promote the solidarity within our own profession which is necessary for the maintenance of our own standards and ideals.

ORGANIZATION SECTION

The Executive Committee dedicates this section to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.

ADDITIONAL APPOINTMENTS

The following appointments have been made by the President of the Society since publication of appointments in the October issue of The Journal.

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CLINICAL SESSION AIMED AT ALLEVIATING EVERYDAY MEDICAL PROBLEMS

CHICAGO—Easier solution of medical problems that the family doctor encounters is the general aim of the American Medical Association's clinical meeting in Miami, Nov. 29 through Dec. 2.

More than 100 physicians will present scientific papers or participate in panel discussions during the meeting, directed toward alleviating the everyday medical problems of the physician.

The meetings in Miami's Dinner Key Auditorium and the McAllister Hotel are expected to be attended by more than 3,000 physicians from throughout the nation.

Dr. Thomas G. Hull, Secretary of the A.M.A.'s Council on Scientific Assembly, said "we have attempted to arrange a program of broad general interest rather than one showing merely the results of investigation or experimentation. While various specialties are represented at the meeting, such as medicine, surgery and obstetrics, the program is not for the specialist in these fields, but rather for the general practitioner who also must work in these areas."

The lecture programs will include subjects of broad interest in medicine, surgery, pediatrics, neuropsychiatry, obstetrics and gynecology.

Outstanding medical authorities also will participate in the scientific exhibit where more than 80 displays will be presented.

Leading surgeons and obstetricians will be available at the scientific exhibit for conferences with individual doctors on problems in fractures and deliveries. Doctors are invited to bring x-rays of fracture cases they wish to discuss. The obstetrical section will include manikin demonstrations of deliveries.

Another section of the meeting, the technical exhibit, will have more than 130 drug, medical equipment and pharmaceutical manufacturers, food processors, medical book publishers and other commercial organizations participating.

Motion pictures will be shown continuously during the meeting and a special filming will be presented on Tuesday evening, Nov. 30, in the McAllister Hotel. This will be the premiere showing of two outstanding films—"Lung Cancer: The Problems of Early Diagnosis", sponsored by the American Cancer Society, and "Differential Diagnosis of the Arthritides", by Dr. William B. Rawls, New York.

Closed-circuit color television again will be shown to doctors attending the clinical session through the sponsorship of Smith, Kline and French Laboratories. Programs originating from Miami's Jackson Memorial Hospital will be brought directly into the lecture hall.

The House of Delegates, the policy-making body of the A.M.A., will hold its sessions in the McAllister Hotel.

KEEP HEALTH INSURANCE VOLUNTARY

On the basis of a great deal of additional information given to us by the insurance industry, we are compelled to reverse our past position favoring the Eisenhower administration's health reinsurance program.

During the past few years several insurance companies have entered the field of catastrophic insurance and now supply policies that cover extraordinary medical expenses at a reasonable cost which the average citizen can pay. Mr. E. A. McCord, president of the Illinois Mutual Casualty Company, has pointed out that his company, for instance, provides catastrophic insurance to cover expenses up to $10,000. It is possible for a man and wife in their 40s with three or more children to get coverage for medical expenses up to $5,000 for as little as $93 a year or $8 a month. Of course the first $500 of such a catastrophic expense is deductible and must be paid by the insured person.

Mr. McCord also pointed out that this type of catastrophic insurance is now being written by the insurance industry largely without any private re-insurance program. The capacity of the industry as a whole to provide this kind of insurance is great and there is no need for the proposed $25,000,000 government fund for this purpose.

Certainly there is a widespread misconception in the United States, which we ourselves have shared, that the insurance industry has been either unwilling or unable to provide reasonably priced catastrophic insurance. It has undoubtedly been spread by the strenuous and effective efforts of those favoring a government-controlled health program. The insurance industry's own failure extensively to dramatize its contributions and to capitalize on them with the public is also responsible.

As we have stated repeatedly in the past, it is a sound principle of government that government should never invade a social welfare field in which private or semi-public agencies are able and willing to provide what is needed. It seems clear that the insurance industry has the capacity and is now showing the willingness to handle this special and long neglected field of catastrophic health insurance.

The best way to prevent socialized medicine or socialized insurance is to eliminate, through private effort, any need or demand for them and to do so before government gets started in the field. The Eisenhower administration can hardly claim a need for government action if the insurance industry has already taken action without government help. And surely if the insurance industry is successful in selling its catastrophic insurance plans on a voluntary basis to the majority of

Americans, there will no longer be any reasonable demand for government action. We hope that happens.

Editorial — *The Indianapolis Star*, September 25, 1954.

NATIONAL DIABETES DETECTION WEEK

The week of November 14-20 will be National Diabetes Detection Week. The necessity of recognizing the fact that a large number of diabetics remain undetected will be brought to the attention of the public and of the profession by means of an educational program. In a number of communities the opportunity to have urines tested will be offered to the public. The program in New Orleans and in Louisiana will be purely "educational" this year. It is hoped that with the cooperation of the profession and of other groups the observation of Diabetes Detection Week in New Orleans will be accompanied by a testing program in 1955. This matter will be brought before the Parish Medical Societies so that plans may be made.

The early recognition of diabetes mellitus at any age is important because it is felt that the diabetic under control can live a normal life. On the other hand the diabetic who does not even know that he has diabetes is in danger in many ways.

The work which is being done for the 1954 Diabetic Detection Campaign is in the hands of members of the National Committees of the American Diabetes Association and of the Parish and State Societies.

THE LOUISIANA HEALTH COUNCIL

The annual meeting of the Health Council will be held in Monroe, Louisiana, November 11 and 12. There will be represented at this meeting 16 organizations from the state having direct relationships with the promotion of health and health education in Louisiana. Every phase of health will be discussed by outstanding members of the groups who are responsible for their roles in health and health promotion activities. There will be recognized leaders from national organizations, including representatives from the American Medical Association and the National Council on Rural Health, and this promises to be a most interesting and instructive meeting.

More of our doctors should become members of the Council and join hands with those who are working so hard to promote a good health program for our people. Won't more of you members come to the meeting, thus indicating your interest in the health and welfare of our people? The organization needs you and your support in this grand undertaking for the betterment of health conditions in our State. Don't let our school children down. They will be our future citizens within a few years and will hold us responsible for our failure in looking after their health in their youth.

The dues are only $2.50 per year. Why do you not apply for membership and participate in this wonderful work?

HEALTH FOR YOU AND YOU FOR HEALTH

You no doubt remember vividly the crisis of 1932 when every individual in America was filled with fear and unrest as to what the future held for them. Did you ever think that a similar feeling would come to you should you know that some of your family or close friends were stricken with an illness that would affect not only their lives but your health and well-being as well as that of the neighborhood in which you live? This illustration, like the parables of old, could easily affect you whether you be physician, lawyer, educator or any individual in any walk of life.

The Louisiana Health Council, a state chapter of the National Health Council, is composed of a group of individuals who are very conscious of the health and health needs of our state. They are giving of their time, resources and efforts to make your state a healthier place for you to live and raise your family. Therefore, we are asking that you join us in working out the various solutions to better health programs for everyone.

We are having, as you will see from the program, most of the organizations in this state who deal with health services to speak to us at our annual meeting November 11th and 12th in Monroe. We are asking you to come and give your community two days time to inform yourself of the various facilities at your command for the promotion of better health in your community.

It has been so aptly said, "no man stands so straight as when he stoops to help a child". We never know when we join a health program that eliminates some dangerous health evil in our community but what we are preventing our own loved ones from becoming a victim of this health menace. I believe that we can further state that we do not believe that children are either good or bad. We can say that a child is either happy or unhappy and poor health is the greatest cause of inefficiency or unhappiness among all people.

In closing I would like to appeal to you to come to this meeting and give of your time and know-how to help develop the program of cooperation with the existing physicians and agencies who are striving at all times to promote your health and well-being in this state. I will be looking forward to meeting you in Monroe.

See program in medical news section.

M. C. WIGINTON, M. D., President
Louisiana Health Council

MEDICAL NEWS SECTION

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
Calcasieu	Fourth Tuesday every other month	Lake Charles
East Baton Rouge	Second Tuesday of every month	Baton Rouge
Morehouse	Third Thursday of every month	Bastrop
Natchitoches	Second Tuesday of every month	
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

DISTRIBUTION OF NURSES

Nearly 400,000 nurses—an increase of 16,000 since 1950—are now working in the U. S., according to new figures announced today by Surgeon General Leonard A. Scheele of the Public Health Service, U. S. Department of Health, Education, and Welfare. Estimates based on the latest available figures from the 48 States and District of Columbia show a total of 389,600 professional nurses in active practice in the Nation. However, the demand for nursing services is so great, Dr. Scheele said, that the present recruitment goal for the Nation as a whole is 55,000 student nurses a year.

The number of hospital nurses, the largest single group, has increased by 15 per cent in the last four years to a total of 231,000. Private duty nurses, the next largest group, who are also at the bedside, number 74,000. The 35,200 nurses working in doctors' offices; 25,300 public health nurses; 14,000 industrial nurses; and the 8,200 nurse educators in schools of nursing make up the remainder of the total, along with 1,900 nurses in a variety of other fields.

The ratio of all nursing personnel, including student nurses in general hospitals, has risen from 69 per 100 patients to 74 per 100 patients since 1950—making it the highest in history.

"The steady rise in the nurse supply of the nation is significant to the total health picture," Dr. Scheele pointed out, "because nurses play such a vital part in all phases of our national health. For that very reason the nursing profession today offers a wide variety of excellent opportunities in the field of public health, in hospitals, schools, industry, doctors' offices, and, of course, in our schools of nursing."

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Dr. George H. Hauser, Vice-chairman

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Dr. M. L. Stadiem, Chairman
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Eighth Annual Convention
Louisiana Health Council
Monroe, Louisiana
NOVEMBER 11-12, 1954

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November 11, 1954

8:00 A. M.
Registration—Virginia Hotel and Francis Hotel
9:00-10:00 A. M.

Business Meeting—Virginia Hotel Roof
Dr. M. C. Wiginton, Presiding

10:00-12:00

General Meeting
Dr. M. C. Wiginton, Presiding
Panel—Report of Resources

1. Health Resources Furnished by State Board of Health
   Dr. S. J. Phillips, President, Louisiana State Board of Health, New Orleans
2. Resources of Louisiana State Medical Society
   Dr. Walter Moss, President Louisiana State Medical Society, Lake Charles
3. Nutrition as it Applies to Everyday Living
   Miss Evelyn Terrell, Supervisor of School Lunches — State Department of Education, Baton Rouge
4. State Department of Education's School Health Program
   Mr. J. B. Robertson, Director of Elementary and Secondary Education, State Department of Education, Baton Rouge
5. State Dental Health Program
   Dr. William Epstein, Monroe
6. Special Education Clinic in Regard to Exceptional Children
   Mr. John E. Robinson, Director, Special Education Clinic—Southeastern College, Hammond
7. Practical Nursing Program
   Miss Marion Souza, Director, Practical Nurse Education—State Department of Education, Baton Rouge
8. Nurse Recruitment
   Miss Dorothy Tayrein, Monroe
9. Parish School Health Program
   Supported by Parish Superintendent's Association
   Mr. F. Shiel, Superintendent LaSalle Parish Schools, Jena
10. Tuberculosis Association Program
    Miss Lois Simmons, Executive Secretary, Louisiana TB Association, New Orleans
11. Cancer Association Program
    Mrs. Marian Simmons, Executive Secretary—Louisiana Cancer Society, New Orleans
12. Department of Institutions—Plans for Health Improvement
    Dr. Edward D. Grant, Director, Department of Institutions, Baton Rouge
13. Agricultural Extension Service Health Program
    Miss Ellen LeNoir, State Home Demonstration Agent, L.S.U. Agricultural Extension Service, Baton Rouge
14. Department of Welfare Health Outlook
    Mr. Edward P. Dameron, Director State Department of Public Welfare, Baton Rouge
15. Voluntary Health Insurance
    Dr. D. B. Barber, Alexandria
16. Visual Screening Program, Alexandria Lions Club
    Dr. Roger F. Shaw, Alexandria
17. Farm Bureau Federation Health Program
    Mr. H. E. Slusher, President, Missouri Farm Bureau Federation, Jefferson City, Missouri
18. American Medical Association Resources for Health Program
    Mr. Aubrey Gates, Field Director, AMA Health Program, Little Rock, Arkansas

12:00 Noon

Luncheon—Francis Hotel
Mrs. Paul Thompson, Presiding
Program—Mrs. Cyril T. Yancey, Auxiliary to Ouachita Parish Medical Society
Speakers—Mrs. M. C. Wiginton, President, Auxiliary to Louisiana Medical Society—Dr. F. S. Crockett, Chairman Health Committee, A.M.A. West Lafayette, Indiana

2:30-3:30 P. M.

General Meeting—Francis Hotel
Dr. M. C. Wiginton, Presiding
Buzz Session

3:30-5:00 P. M.

Questions for Panel Members
Moderator—Dr. H. B. Hewitt

7:30 P. M.

Banquet—Virginia Hotel Crystal Ball Room
Dr. M. C. Wiginton, Presiding
Greetings—Mr. John E. Coon, Mayor, Monroe; Mr. Allan Norris, Mayor, West Monroe; Mrs. Paul Thompson, Acting President, Ouachita Health Council; Dr. Walter Moss, State Medical Society
Response—Mr. Ira L. McGehee
Speaker—Mr. H. E. Slusher, Missouri Farm Bureau

November 12, 1954

9:00-10:00 A. M.

Business Meeting — Virginia Hotel Crystal Ball Room
Dr. M. C. Wiginton, Presiding

10:00-11:45 A. M.

Discussions—Incorporation of Resources in State Program

12:00 Noon

Luncheon—Virginia Hotel Roof
Mr. Ira L. McGehee, Presiding
Speaker—Mr. Aubrey Gates
Installation of Officers—Mr. Aubrey Gates

Afternoon

Meeting of the Board — Virginia Hotel Crystal Ball Room — (Officers and Board Members elected for 1955)

•

Convention Committee Chairmen

Program	Dr. H. B. Hewitt
Convention	Dr. Cyril T. Yancey
	Mrs. Paul Thompson, Co-Chairman
Registration	Mrs. Gilbert Faulk
Decorations	Mrs. Dewitt Milam
Music	Mr. P. B. Mangam
Banquets	Mrs. James Larkan, Jr.
Tickets	Miss Eleona Brinsmade
Luncheons	Mrs. Dewitt Milam
Publicity	Mr. Roger Manning
Housing	Mr. Dan L. Caldwell
	Dr. Seymour Solomon

MEDIC TV PROGRAM RELEASE DATES

For those who have been following Dow Chemical Company's new TV program, entitled "Medic", over the NBC network on Monday nights, the following titles and subjects to be covered in future broadcasts have been obtained.

November 8, General Practitioner; November 22, Day 10, Bubonic Plague; November 29, My Very Good Friend Albert, Hearing; December 6, With This Ring, Unwed Mother; December 20, Red Christmas, Medical Aspects of Traffic Accident.

BOOK REVIEWS

Cure Your Nerves Yourself; by Louis E. Bisch, M. D., New York, N. Y., Wilfred Funk, Inc., 1953, pp. 247. Price $3.50.

This book purports to help the individual work out his troubles without going to a psychiatrist, partly because it is alleged he *can do so*, and partly because a psychiatrist is either unavailable, unnecessary, or too expensive.

The reader will probably get his greatest benefit from reading through until he comes to an instance or an illustration with which he can identify. This same proposition holds for many books, but seems especially so in this one. At times the advice is generalized to the point of uselessness and amounts almost to psychiatric evangelizing.

The book has a lot of admonition that is almost impossible to achieve, as for example, you should have a "frank, straight, honest, heart-to-heart talk with yourself." Also, the importance of "knowing thyself" is stressed. And then there are such discouraging and impossible statements as, "First you must understand your emotional nature thoroughly, no matter how hopelessly different it may seem to be." These represent goals which few people ever reach, even with help. Then there are such statements as "Everybody can do at least one thing superlatively well," which is simply not true.

There is some doubt about the effectiveness of self-induced therapy as coming from a book. Certainly the presence of a helping person or a group is much more likely to initiate reform and furnish strength. It would seem that if a person is helped by this book, he is probably on the verge of helping himself, and needs only trigger help to get started.

There are psychiatric ideas that may be new to most people, such as, that fears of suicide and insanity are protective.

Paragraphs here and there are splendid gems, but one gets the impression that the book was written too rapidly.

With all these comments which appear to be negative, this reviewer got some personal benefit from reading the book. And that, after all, is an important test.

LOYD W. ROWLAND, PH.D.

Pathology of the Heart; by S. E. Gould, M. D., Springfield, Illinois, Charles C Thomas, 1953, Pp. 1023. Price $25.50.

It is difficult to criticize this book from the pathological aspect. The material covers all the standard discipline used in studying how organs function in health and disease. The book merits a more inclusive title, for the function and anatomical aspects are tantamount to the pathological writings both in quantity and quality. At the same time it alters one's criticisms when one thinks of it only as a work of pathology in contrast to a more general treatise on heart disease. For example, a chapter was devoted to rheumatic disease of the heart but none to hypertensive disease of the heart, the leading cause of death in heart disease. It is not as distinct a pathological entity as rheumatic disease, but the book is not exclusively on pathology. Since this book shows a practical approach to heart disease it seems logical to include a chapter, or a more detailed sub-chapter, on hypertensive heart disease.

The presence of paragraphs on terminology which are very rewarding in the chapters that possessed them were conspicuously absent in many of the others. Some of the greatest advances a reader of this type of book obtains is how to use the terms less ambiguously, both while reading the chapter and in using the information in the future. Another valuable constituent of a chapter such as above would be the natural history of the disease. The information was usually available in each section, but would be more valuable listed under the above heading.

A chapter on modern advancements and new studies in pathology of the heart is wanting with an emphasis on problems brought out by this book. For example, such a chapter could include the statement that not all mitral valve deformities are due to rheumatic valvulitis, that failure in old rheumatic heart disease is often due to active disease, that myocardium fails at times without change of the muscle fibers being demonstrated by conventional techniques and criteria for stenosis of valves, dilated rings, and hypertrophy of cardiac muscle. Nothing was said about histochemical studies which could be included in the above.

This book is valuable to any physician who treats heart diseases. It is unusually factual.

C. Y. BOWERS, M. D.

PUBLICATIONS RECEIVED

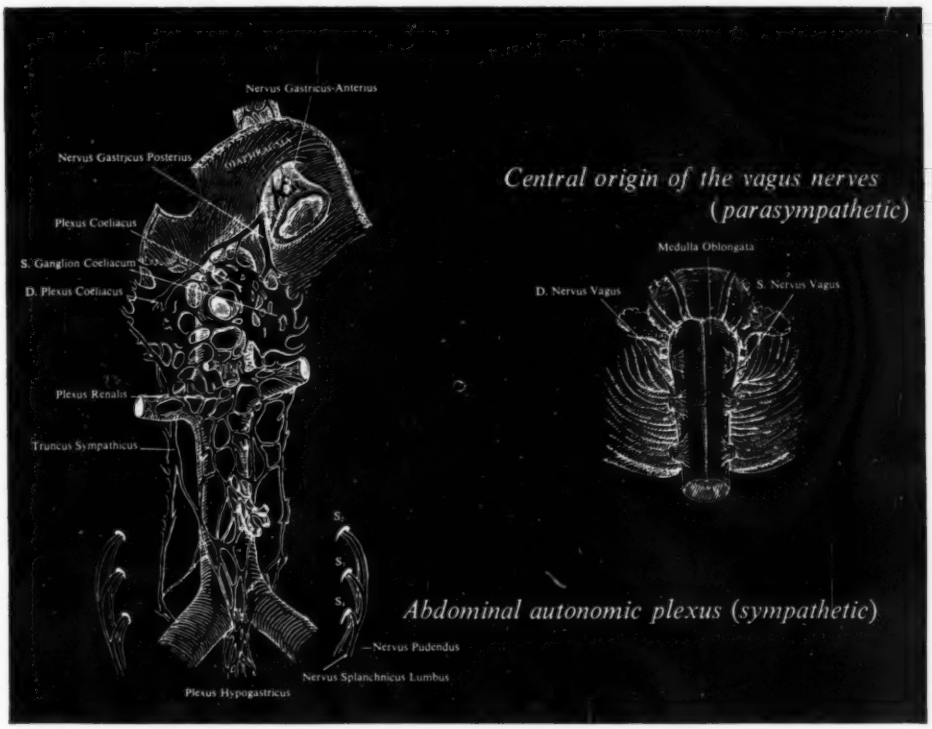
American Pharmaceutical Association, Washington: The Manual of Antibiotics, by Henry Welch, Ph.D.

Harvard University Press, Cambridge: Biochemical Determinants of Microbial Diseases, by Rene J. Dubos.

Little, Brown & Co., Boston: Clinical Aspects of the Autonomic Nervous System, by L. A. Gillilan, Ph.D., M. D.

Philosophical Library, N. Y.: The Scourge of the Swastika, by Lord Russell of Liverpool, C.B.E., M.C.

Charles C Thomas, Publisher, Springfield, Ill.: Neck Dissections, by James Barrett Brown, M. D., and Frank McDowell, M. D.



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1. Zupko, A. G.: Pharmacology and the General Practitioner, GP 7:55 (March) 1953.

2. McHardy, G. G., and Others: Clinical Evaluation of Methantheline (Banthine) Bromide in Gastroenterology, J.A.M.A. *147*:1620 (Dec. 22) 1951.

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1. Werner, A.: Acta endocrinol. *13*:87, 1953.
2. Malleson, J.: Lancet *2*:158 (July 25) 1953.
3. Goldzieher, M. A., and Goldzieher, J. W.: Endocrine Treatment in General Practice, New York, Springer Publishing Company, Inc., 1953, p. 23.

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Evaluating and Managing Emotional Problems in Practice, October 8—December 17, 1954 (Fridays, 2:00—5:00 p. m.) (Thanksgiving week excluded)

Special ECG, October 8—December 17, 1954 (Fridays, 8:00 — 10:00 p. m.) (Thanksgiving week excluded)

Diagnostic Radiology, November 18-19, 1954

Ocular Pathology, November 29—December 3, 1954

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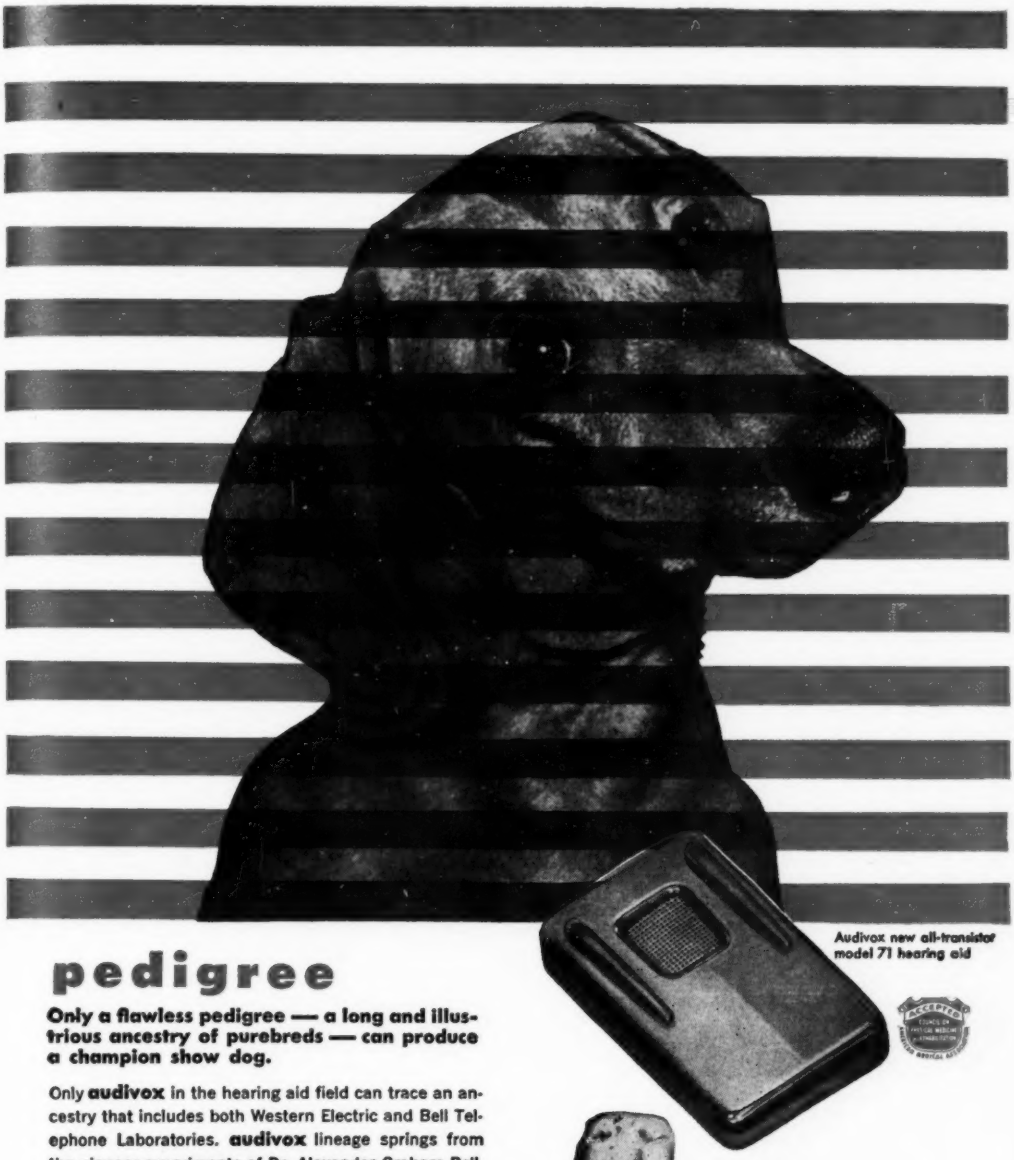

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Neither the optimal level of fat in the diet nor the optimal range for apportionment of fat and carbohydrate to meet calorie allowances is known.[1,2]

Contrary to general impressions, fat in the mixed diet is effectively digested.[4,d] In moderate amounts it does not appreciably influence the digestibility of other foods.[5] Fat enhances the satiety value of meals, and foods naturally containing fat and those prepared with fat add much to the flavor value of meals. High fat diets sometimes are useful in alleviating constipation.[6]

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1. Goldsmith, G. A.: Application to Human Nutrition, in Bourne, G. H., and Kidder, G. W.: Biochemistry and Physiology of Nutrition, New York, Academic Press Inc., 1953, chap. 23, p. 505.
2. Recommended Dietary Allowances, Washington, D. C., National Academy of Sciences—National Research Council, Publication 302, 1953, p. 23.
3. Ekstein, H. C.: Fat in Nutrition, in Handbook of Nutrition, A Symposium, ed. 2, Philadelphia, The Blakiston Company, 1951, p. 23.
4. Sherman, H. C.: Chemistry of Food and Nutrition, ed. 8, New York, The Macmillan Company, 1952, (a) p. 30; (b) p. 198; (c) p. 115; (d) p. 103.
5. McLester, J. S., and Darby, W. J.: Nutrition and Diet in Health and Disease, ed. 6, Philadelphia, W. B. Saunders Company, 1952, pp. 130-135.
6. Smith, F. H.: The Use of High Fat Diets for Constipation, J.A.M.A. *88*:628 (Feb. 26) 1927.
7. Okey, R.: Cholesterol Content of Foods, J. Am. Dietet. A. *21*:341 (June) 1945.

The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

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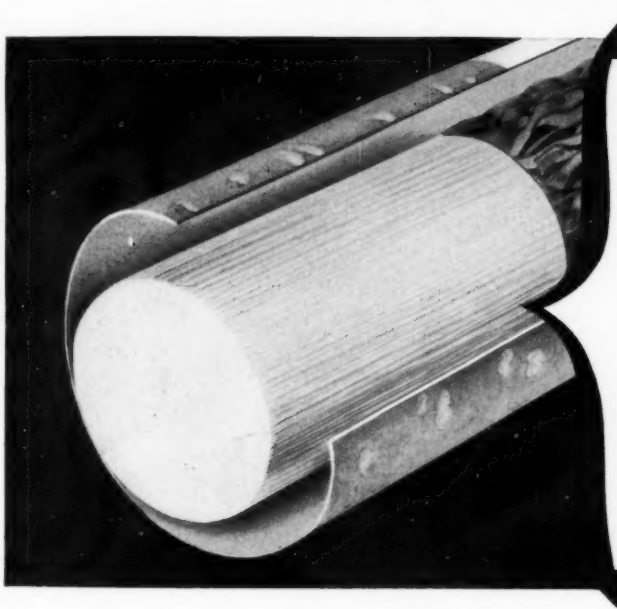

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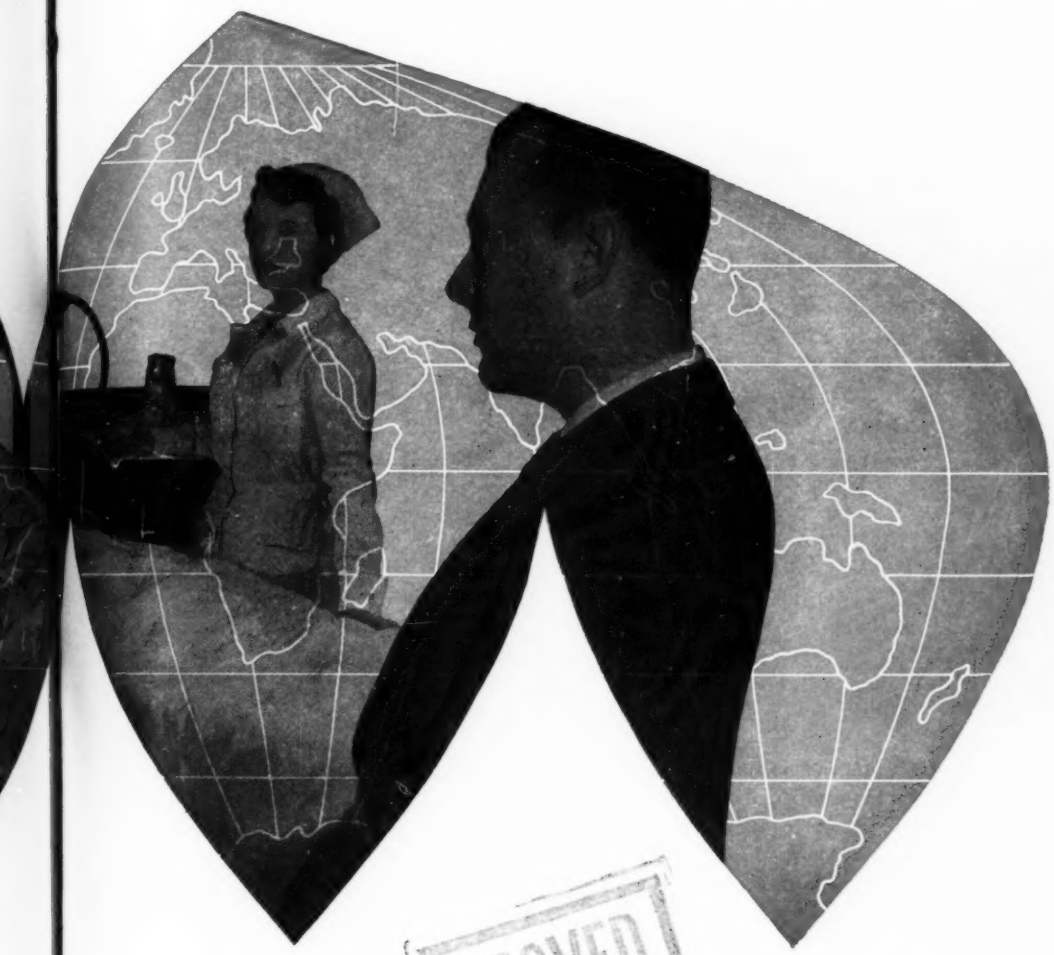

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	Mild	*Moderate*	*Total*
Streptomycin	0	0	0
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*Heck, W.E.; Lynch, W.J., and Graves, H.L.: Acta oto-laryng. 43:416, 1953.

Distrycin dosage is the same as for streptomycin. In tuberculosis the routine dose is 1 Gm. twice weekly, in conjunction with daily para-aminosalicylic acid or Nydrazid (isoniazid). In the more serious forms of tuberculosis, Distrycin may be given daily, at least until the infection has been brought under control.

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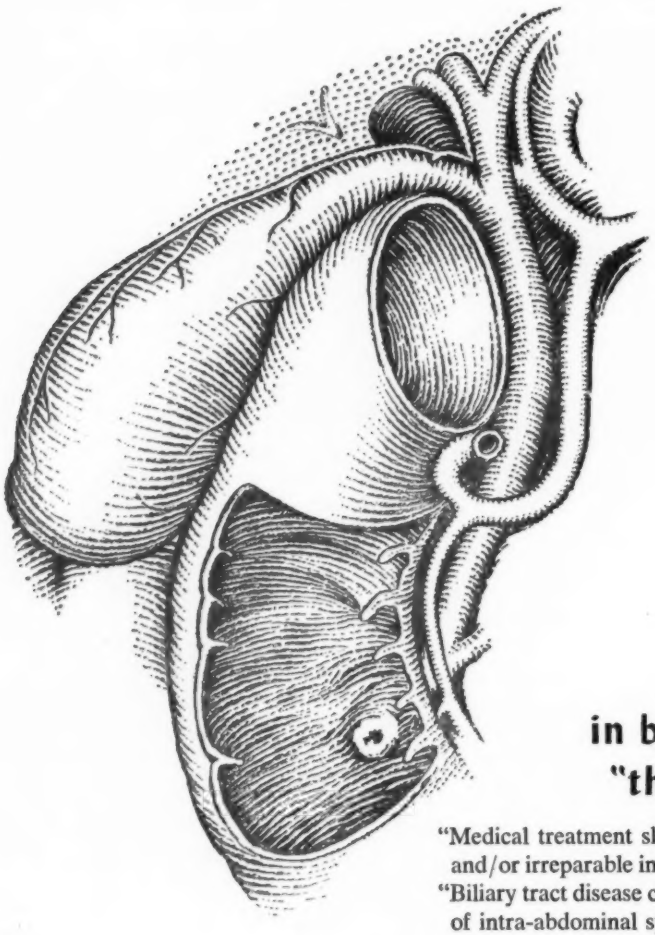

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1. Segal, H.: Postgrad. Med. *13*:81, 1953. 2. O'Brien, G. F., and Schweitzer, I. L.: M. Clin. North America *37*:155, 1953. 3. Beckman, H.: Pharmacology in Clinical Practice, Philadelphia, W. B. Saunders Company, 1952, p. 361.

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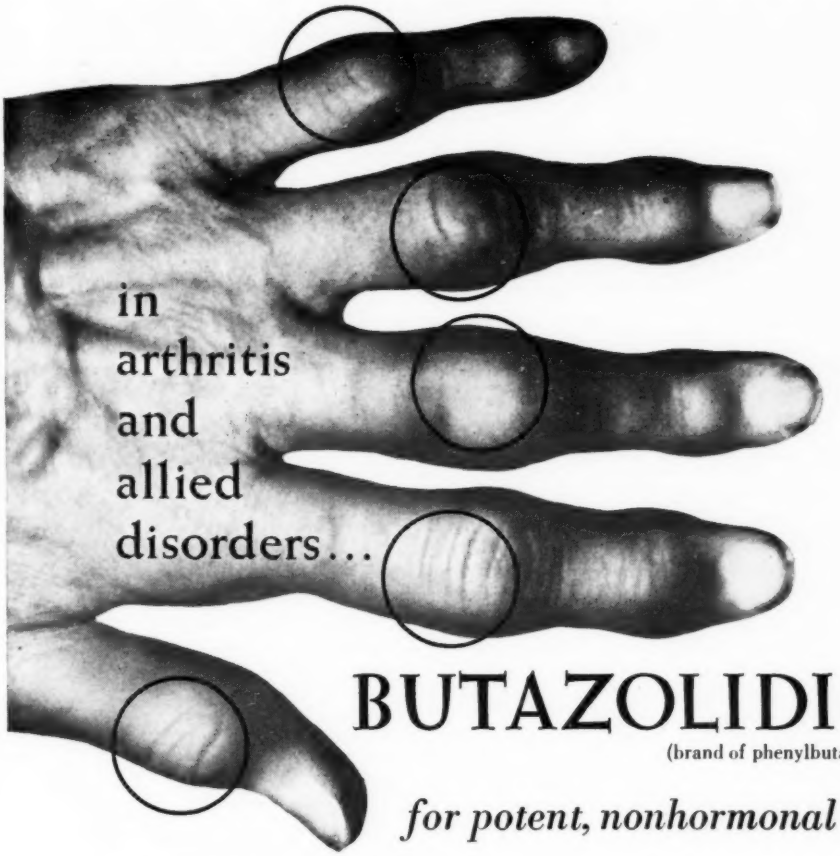

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*MacKnight, J. C.; Irby, R., and Toone, E. C., Jr.: Geriatrics 9:111 (Mar.) 1954.

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*Lucia, S. P.: Wine as Food and Medicine, New York, The Blakiston Company, Inc., 1954.

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1. Allen, E.V.; Barker, N.W.; Hines, E.A., Jr.; Kvale, W.F.; Shick, R.M.; Gifford, R.W., Jr., and Estes, J.E., Jr.; Proc., Staff Meet. Mayo Clin. *29*:459 (Aug. 25) 1954.
2. Livesay, W.R.; Moyer, J.H., and Miller, S.I.: J.A.M.A. *155*:1027 (July 17) 1954.
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4. Kert, M.J.; Rosenfeld, S.; Mailman, R.H.; Westergart, J.P.; Carleton, H.G., and Hiscock, E.: Angiology *5*:318 (Aug.) 1954.

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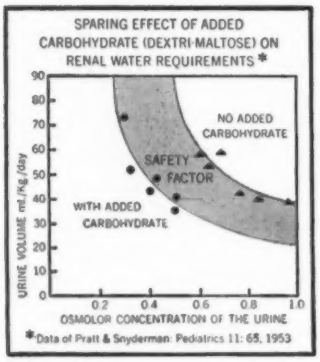

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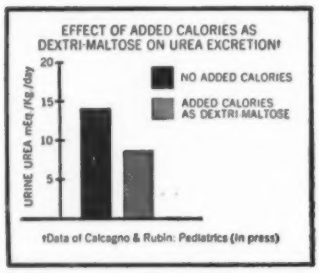

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1. Pratt & Snyderman: Pediatrics 11: 65, 1953; 2. Calcagno & Rubin: Pediatrics (in press); 3. Calcagno, Rubin & Weintraub: J. Clin. Investigation 33: 91, 1954; 4. Cooke, Pratt & Darrow: Yale J. Biol. & Med. 22: 227, 1950; 5. Gamble: J. Pediat. 30: 488, 1947; 6. Rappaport: Am. J. Dis. Child. 74: 682, 1947.

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